President's Report to Members[1]

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THE FORTY-SECOND year of The American Dietetic Association has been a shortened one but filled with varied activities, the highlights of which I shall endeavor to summarize in this report and make meaningful to you as members of the Association.

It makes a fascinating story to weave together the new ventures and the continuing programs in an organization as complex and large as The American Dietetic Association. One really begins to see that to achieve any degree of success we are dependent on the fine planning and actions of our predecessors, as well as on the imagination, leadership, and interactions within the present group. The elected officers guide, but it takes the cooperative effort of the members of the Executive Board, the Section Chairmen, and members of the Council (these groups make up the Coordinating Cabinet); Committees; Boards; Headquarters staff; and state and local associations to bring about the fulfillment of the objectives of the Association. Like an iceberg, much more is beneath the surface than appears above it, both in activity and results. Also, much of the work of this Association is a continuing activity, with no sharp cut-off either at the beginning or end of a given period of time.

History of the Association

The initial appearance of the *History of The American Dietetic Association,* covering our first forty years, will be the "spectacular" at this forty-second Annual Meeting in Los Angeles. This nineteen-chapter volume was edited by Mary I. Barber during the past two years, from records and files accumulated since 1917. We are indebted to Miss Barber for her willingness to do the job and for the "sparkle" she has attained with factual material. Much credit and appreciation are due also to the many members who have contributed to the records and to their preservation, especially to Anna Boller Beach.

We are pleased that the J. B. Lippincott Company is the publisher. We hope that many copies of this book will be in use as a reference in schools and public libraries, by guidance counselors, as gifts to graduating interns, and on our own personal bookshelves. It is wonderful to have the complete story of our heritage and history and to be able to share it with others here and in distant lands.

The Committee on the History of the Association is assembling a cumulative file of material in anticipation of a future supplementary publication.

New Constitution

A proposed constitution was submitted to the members for vote by mail and accepted by an eight-to-one vote in April 1959. The two major changes incorporated in the new Constitution are concerned with rate of dues and size of the House of Delegates. Both had been subjects for study by special committees and for wide discussion with individual members and groups. Relatively few objections were voiced to the proposed changes; in fact, there was some expression that dues should have been increased more. The reduction in number of delegates will contribute to the lessening of expenses, in the large states particularly.

The financial problems of states were not disregarded when rebates for states were not changed. It was considered expedient that we should first bring back at least to the break-even point our operations at the national level. Through a substantial income from a large annual meeting and other sources, careful budgeting, checking, and economy practices, the auditor's report for the fiscal year ending May 31, 1959, shows a small margin of gain rather than the budgeted deficit. However, we cannot afford to jeopardize progress in our programs or services to the membership in a too-limiting man-

[1]Presented in Los Angeles at the business meeting of members of The American Dietetic Association on August 25, 1959.

ner. The costs for developing new programs and continuing present ones are important factors, but cost must not be the major determinant as we work for the betterment of the profession.

Studies are under way to determine how costs in state associations might be reduced through increased services from the Headquarters office. For some time, small state associations of sixty members or less have been eligible to request up to $35 worth of recruiting materials free of charge.

The Manual for Officers of State Dietetic Associations and the model Constitution for State Associations have been revised in conformity with the new Constitution.

Highlights in Our Education Programs

Educational programs in schools, colleges, universities, and industry are constantly undergoing scrutiny and change, in order to prepare their respective students or personnel to meet more adequately the problems in our society today. Dietetics in its many aspects exemplifies the general trend in education toward breadth of knowledge with depth in a specialized area. The Committee to Study Broadening of Membership gave us an excellent overview and interpretation of this concept through its statement of objectives for various background subject matter areas, and the outline of Plan III that provides new roads to membership in the Association for persons from areas related to dietetics.

The continuing education program of the Association has gained in stature under the guidance of Dr. Bruce Kirk. Although Dr. Kirk has accepted a position elsewhere, he will continue to coordinate the program temporarily on a consulting basis, with the cooperation of the Chairman of the Education Section and the eight area representatives and eight co-representatives.

Services available to the members in the continuing education program have become well known through: the area representatives, Dr. Kirk's page in the JOURNAL, articles in the *Courier*, personal correspondence, and his participation in workshops, institutes, and state association meetings throughout the year. We anticipate activity in continuing education to increase, particularly as information on local resources is accumulated by the area representatives. Many states have reported successful workshops during the year, some of which have been a part of their annual meetings. A few have had University Extension Service courses designed to meet their needs.

The Committee to Explore Ways and Means of Encouraging Advanced Study by A.D.A. Members has done much to provide information and inspiration on this subject. The demands on persons in positions of responsibility in all areas of dietetics make it imperative that members of the profession keep well informed regarding new developments in subject matter, research, and educational trends. Graduate study is one of the most satisfactory means to accomplish this. Also, the flexibility in a graduate program provides opportunity for one to supplement the undergraduate and experience background to become a well rounded and highly qualified individual. The Committee recommends that this activity be continued at state level as a project in the Education Section so that promotion can be adapted to the opportunities and situations in each state. Representatives of graduate programs in home economics from various colleges and universities will be at the Annual Meeting to answer questions about advanced study.

The Curriculum Guide for Internships is being revised. A committee has solicited suggestions for desirable changes, deletions, and additions from internship directors and their staffs and some university specialists in food and nutrition, and in institution administration. The committee will summarize the suggestions in preparing the new *Guide.*

The number of dietetic internship appointments for 1959-60 is slightly above the number at a corresponding time last year. Graduate study opportunities as a part of the internship program are increasing.

The third edition of the *Handbook of Diet Therapy* became available in May. Copies of this publication may be obtained from the Association office.

Section and Committee Activity

Reports from both Section and Committee Chairmen have been most gratifying, despite the ten-month period instead of the usual twelve. Because detailed accounts of accomplishments will be reported in the *Annual Reports and Proceedings*, mention of only a few highlights will be included in this report.

Combating food and nutrition misinformation, aid to foreign libraries, compilation of diet manuals, and food management studies have been given much attention. The use of continuing education services and improvement of communications are emphasized in all Sections. Consensus at the midyear meeting, and reaffirmed at the August meeting of the Coordinating Cabinet, indicated the desirability of project origination at *both* the state and national levels with suggestions for some cooperative activity among the Sections. Section chairmen will cooperate with a new committee of the Coordinating Cabinet in outlining a program of work for the coming year. Cooperative projects among neighboring states has been encouraged.

The Public Relations Committee and its two subcommittees, Career Guidance and Educational Exhibits, have been extremely active. The *Public Relations* and the *Career Guidance Newsletters* have re-

ported throughout the year the many activities in these areas. The importance of the Public Relations program of the Association has been recognized in the new Constitution. The Chairman of the Public Relations Committee is now a member of the Coordinating Cabinet.

Definitions for dietitians and nutritionists have been revised and made ready for inclusion in the next edition of the *Dictionary of Occupational Titles*. A plan for an A.D.A.-sponsored organization of food service supervisors, with standards for membership, has been proposed. The Committee on International Relations Among Dietitians is broadening its scope to include services to members as well as assistance to dietitians for other countries.

Cooperation with home economics groups in a communications program at the state level will be given considerable attention this year. Continued emphasis on improved communications throughout the organization is urged and emphasized by the committee representing The American Dietetic Association in the Home Economics Section of the National Project on Agricultural Communications.

The Association has been one of the active organizations cooperating with the Civil Defense Administration. Recognition should be given to Dorothy Bovee, who for the past six years has served as Chairman of our Committee on Disaster Feeding and Civil Defense Planning.

Joint Committees and Representatives to Allied Organizations

The American Dietetic Association cooperates with allied associations in a multitude of ways. Such activity will be increased next year through a new joint committee with the *American Medical Association*, which will make possible cooperative effort on problems of mutual interest. Although we have had representation on a committee to study diets in the treatment of gastro-intestinal diseases, the new committee is the first at the national level.

The American Dietetic Association was also represented at a joint meeting called by the American Medical Association to "study paramedical areas in relation to medicine." As a result of this meeting, membership in The American Dietetic Association has been recognized as "the standard, academic and experience, to the medical and allied professions—that an individual is professionally qualified."

The Joint Committee with the *American Hospital Association* has sponsored institutes at Kansas City, New Orleans, and Pittsburgh during the year. A questionnaire and the compilation of a menu guide for use in hospitals without dietitians are in preparation. There has been much cooperative effort with effective results at the state and local levels between members of The American Dietetic Association and the *National League for Nursing* during the past year. Also the Joint Committee on Rehabilitation with the *American Home Economics Association* has been active.

A representative from The American Dietetic Association is cooperating with the Nutrition Committee of the *American Heart Association* in preparing information for a booklet on fat-restricted diets for use of physicians and patients.

Several groups interested in the problems of the aged have invited our representation and participation, the latest being for United States Senatorial Hearings held by the Subcommittee to Study Problems of the Aged and Aging, called by Senator Pat McNamara of Michigan. Dietitians are participating in the Regional Conferences on Aging, sponsored by the American Medical Association. Emphasis is on the development of community programs to improve opportunities for senior citizens.

Some meetings at which the Association has been represented include: annual meetings of the American Home Economics Association, Canadian Dietetic Association, National Catholic Hospital Association; Policy Committee, National Citizen's Committee for World Health Organizations; National Organizations Interested in Health, called by the Secretary of the Department of Health, Education, and Welfare; National Health Council; Committee on Standards for Maternity Care in Hospitals, American Association for Maternal and Infant Health; Council, American Association for Advancement of Science; Conference on Common Names for Food Additives, sponsored by the American Standards Association; meeting called by the Food and Drug Association; annual meeting of Food Facilities Engineering Society.

The American Dietetic Association representative on the Interim Committee for the Third International Congress of Dietetics attended a planning meeting of the committee in London in July. Information will be available soon regarding details of the program, travel, registration, and housing. Persons who expect to attend the Congress should make reservations early. The Congress will be held in London in July 1961 and promises to be a stimulating experience. We shall hope to have a large delegation there and active participation on the program.

The Association is represented on the Council of National Organizations for the Golden White House Conference on Children and Youth. A member has also been appointed to represent nutrition on the Advisory Committee for the 1960 White House Conference on Aging.

W. K. Kellogg Foundation Grant

We must recognize that the increase in the number of qualified dietitians has not kept pace with the demands, even though we have worked hard at recruitment. We have studied the duties and responsi-

bilities of the dietitian and encouraged her to utilize her knowledge and abilities effectively and efficiently, and most recently we have broadened the academic base for membership in the Association.

The Association has been concerned for some time with the training of food service supervisors to help relieve the situation. Certain responsibilities can be delegated to such individuals, with supervision, thus permitting the qualified dietitian to use her talents and time to the best advantage.

Recently the W. K. Kellogg Foundation became interested in giving assistance to this problem. On August 1, 1959, a grant of $71,160 was made to The American Dietetic Association to establish an experimental training program for hospital food service supervisors. It is expected that appropriate basic curriculum materials will be developed for two types of programs, namely: a one-year correspondence course with preceptor supervision and a second program to include short-term residence with laboratory instruction, with similar preceptor supervision. Pilot studies with limited numbers of enrollees in both types of programs will be completed within the eighteen-month period of the grant. At the conclusion of the experiment, the Association will hope to determine the most expeditious method of making in-service training available for food service supervisory personnel in hospitals.

Looking to the Future

Organizations such as The American Dietetic Association must always be sensitive to the glories of their past, and we are justly proud to be able to feature this year the first published history of our Association. Alertness to our role in a society of changing values is necessary for us to maintain our present standards, but the challenges of the future are ever before us.

As we look to the future, are we taking the analytical approach? In our long-range planning, are we studying the effects of trends in education? Are we considering the needs of our members in relation to the objectives of the Association as we now interpret them? In what directions do we wish to go? These and other questions the Executive Board is asking a new committee to study. The persons appointed to this assignment will be known as the Committee on Future Development of the Association, and their charge is to suggest directions for the continuing development of the Association.

We realize that this assignment may take months or even several years to complete. We believe, however, that before we reach our Golden Anniversary, an objective assessment of ourselves and a look to the future will be a real step forward for The American Dietetic Association.

Linoleic Acid Requirements of Infants

The optimal level for linoleic acid in infant diets appears to be about 4 per cent of the calories, as indicated by research at the University of Texas School of Medicine under USDA contract. This amount is the level found in human milk. Thus, these studies suggest that this may account, in part at least, for its superiority over cow's milk in infant feeding. The fatty-acid content of formulas has not, in the past, been adjusted in cow's-milk formulas for infants.

The Texas researchers fed babies *ad libitum* with various cow's milk formulas or human milk. Some diets were supplemented with linoleic acid so that intake ranged from 0.1 to 8 per cent of total calories.

Optimal serum levels were believed to be about 24 per cent for dienoic acid, less than 1 per cent for trienoic acid, and 10 per cent for tetraenoic acid—the levels obtained when human milk was fed. *Minimum normal* serum levels were obtained with evaporated milk formulas with linoleic acid comprising about 1 per cent of calories. The serum dienoic and tetraenoic acids reflected closely the linoleic acid intake, but an inverse relationship for trienoic acid was found.

Total food consumption also varied inversely with linoleic acid intake. On an extremely low intake (0.1 per cent in a skim milk formula), some babies demanded enough formula to furnish 155 calories per kilogram; on 1 per cent linoleic acid (evaporated milk formula), they consumed enough to furnish about 105 calories, but at the 4 per cent level (human milk), total intake provided only 85 calories per kilogram. Results were the same for infants receiving either 8 per cent or 4 per cent linoleic acid.

At each level of linoleic acid intake, all infants maintained the same rate of growth, indicating more efficient use of their food at higher intake levels. However, the experimental period was short, and longer periods might have shown some effect on the growth rate. When linoleic acid made up 4 per cent of the total calories, caloric intake was less per unit of gain in weight.

At present, the same researchers are studying serum fatty acids in *newborn* infants and their mothers.—*From Agricultural Research 8: 13 (July), 1959.*

Food Habits in a Siamese Village[1]

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IN CONNECTION with the Cornell-Thailand Project, dietary studies designed to contribute to a base-line description of Bang Chan, a Siamese village, were carried out from September 1952 through May 1954.

A general account of the economic, political, and social organization of Bang Chan in 1948-49, together with some material on health and diet was given in the first interim report issued on the Thailand Project (1). In the second interim report, aspects of health, sanitation, and nutritional status in Bang Chan in 1952-54 were presented (2); and the third concerned factors related to acceptance of innovations (3). Many aspects of the food situation in Bang Chan were described in the fourth interim report (4), and quantitative information was given on food intake and its estimated nutrient value for two groups of families selected on the basis of apparently differing nutriture.

In this report, the food habits in Bang Chan and and environmental, economic, and social factors which influenced them will be briefly described as a background for the data on nutrient intake to be presented in a separate paper (5).

Sources of information include personal observation and field notes of members of the research group, information obtained during the quantitative dietary study in which eleven households took part, and records of school children's food intake, obtained as part of the work in a health class one day each month during the school year. The family meals recorded by the school children were similar to those prepared in the eleven households studied; thus our confidence was increased that the meals observed were not unusual. Moreover, the larger number of records obtained from school children gave us a reasonable idea of foods available in the village and commonly used at various times of year.

The Community

Description of the community will be limited to that necessary to orient the reader. Further details will be found in the interim reports, especially the fourth (4) which has been freely drawn upon for this summary.

Bang Chan is situated in the rice-producing area of central Thailand, about 20 mi. by road northeast of Bangkok. The community, scattered over an area of approximately 5 sq. mi., had a population in 1954 of approximately 1700, divided among 336 households. About 60 per cent of the households were made up of independent families, parents with unmarried children, with an average family size of 5.7 persons. The community was defined simply by the clientele which patronized Wat Bang Chan, the Buddhist monastery and place for religious exercises, and the one primary school in the village, situated on the grounds of the wat. Within the area of the community lived a small minority of Thai Moslems who patronized a mosque and school just outside Bang Chan. The few Chinese in the village were considered as part of the Thai-Buddhist community. Information to be presented on food habits refers primarily to habits of the Buddhist majority.

A road, connecting Bangkok and Minburi, the nearest market town, ran through one edge of the village. Within the community, one went by boat on the network of canals during the wet season, and during the dry season, on foot along the dikes or

[1]Received for publication June 10, 1959.

[2]The authors are indebted to the people of Bang Chan, to all who patiently answered questions, and to Khruu Sawad Sangtong and Khruu Yod Nakcn who obtained dietary records from children in the third and fourth grades. For the period of her field study, 1952-53, the senior author received an award for advanced research from the United States Education (Fulbright) Foundation in Thailand.

Kitchen during meal preparation

across fields. Some adults in Bang Chan had never been to Bangkok, though almost all had visited Minburi, about 3 mi. away. When travel by boat was possible, boat vendors brought fresh produce and staples. They often extended credit and also accepted items such as fresh fish, fruit, and eggs on a barter basis, thus providing an outlet for small amounts of home products.

Annual Cycle of Activities

Basic to an understanding of food habits in Bang Chan is a knowledge of the annual cycle of activities. The main occupation of 80 per cent of the families was rice farming. Though there were clear differences in socio-economic status, the daily lives of the people were much alike: whether owners of land or renters, whether farming large or small plots, rich and poor worked in the fields at the same tasks and produced or gathered much of their food.

The tropical monsoon climate, together with the overflowing Chao Phraya River, provided natural conditions for raising a single crop of wet rice. From late May to November, during the hot wet season, the land was prepared, seed beds grown, seedlings transplanted, and the lush, green rice fields grew. Despite availability of fish and greens in the canal, highest cash outlays for family food occurred in the transplanting season. Increased energy needs for work, cash on hand from sale of the previous year's crop, vendors accessible because of high water, and the convenience of purchased foods—all probably contributed to this situation.

Early varieties of rice began to mature in November, and harvesting continued throughout the cooler, dry season to early February. Hours of work were even longer during harvest than transplanting. The crop must be brought in while enough water remained in the canals so that sheaves could be moved and buyers could still come for the paddy (unhusked rice). Every daylight hour was used for field work, and threshing continued far into the night. At this time, too, many varieties of fish matured, and some family members fished night after night. School vacations were scheduled during the heavy work seasons of transplanting and harvest, so that older children might work in the fields and younger ones help care for babies and toddlers, who were never taken to the flooded fields. School-age children could also help fish, cook, gather food for the family and grass for the buffalo. Cooperative harvesting was common, but those with larger fields to harvest often hired neighbors, both men and women, as temporary helpers.

For most households in Bang Chan, sale of surplus rice was the main source of income. For some, sale of other home-produced foods, such as eggs or fruit, and of fish and wild greens obtained from the canals augmented the cash income. A few turned to other labor, such as canal digging, when farm work was slack.

When the crop was in, most people rested, fished, and prepared for big ceremonies demanding organized work. Ponds were drained, and the fish on the muddy bottom caught. Cash expenditures for food, which had declined progressively since the beginning of the rice year, reached a minimum, chiefly because people had ample time to fish.

During the hot, dry, post-harvest season, festivities and ceremonies dominated the village scene. Some of these, such as weddings, rites to honor a teacher, and pre-ordination feasts, were held at home, with many members of the community participating. Others, such as cremations and ordinations, took place at the wat (temple). Food played an important role in all of these affairs. Such occasions provided opportunity to "make merit" and add to one's prestige, as did the regular offering of food to the priests, throughout the year.

Though the beginning of Buddhist Lent in July marked the official end of the season of festivities, their number declined sharply in later May when the rains came, and the rice year began once again.

Home Sites and Houses

Since the canals provided the chief means of local transportation for much of the year and also supplied water for many household uses, houses were built near the canal. Even though home sites were mounded up to a level of 2 or 3 ft. above that of the fields, water might cover the mound at the peak of the rainy season. Many houses were built on stilts to avoid flooding when the water level was high.

Depending on the resources of the family, houses were built of either thatch or wood, roofed with thatch, galvanized iron, or occasionally, tile. Split bamboo or matting might be used for dividing walls, if the house had more than one room. Wooden floor-

Preparation of coconut milk. Note food safe with ant-proof legs in background

ing was usual. In simpler thatched houses with dirt floors, one or more low wooden platforms were built for sitting and sleeping, and water buffalo might be sheltered under the same roof with the family.

In the larger houses, the kitchen was usually a small separate room with a wooden floor and at least one window for ventilation. In smaller houses, especially those with an earthen floor, food preparation was carried on in one corner of the main room. Here the "fireplace" might be simply a mound of clay on the ground, with a clay stove on top of it. In houses with a wooden floor, the "fireplace" would be a low table or wooden case with sides built up several inches, and filled with clay. On this stood the clay stove, beside which hot pans and pots were set when removed from the fire. Firewood was kept nearby. Most families also had a portable charcoal stove for auxiliary use for outdoor cooking or when traveling by boat.

In many kitchens, clean dishes were placed upside down on a slatted wooden rack. A free-standing ventilated cupboard or "food safe" was the other common item of furniture. At its best, this was screened and the legs ant-proofed, but relatively few families had such well constructed food safes. Families often kept leftover cooked foods in a basket or covered with large dishes on a tray. Fish and sugar must be kept away from ants, but cooked rice, which did not attract them, could be left anywhere out of reach of dogs. A large jar or oil can held raw rice while salt, fermented fish, shrimp paste, and fishsoy were stored in smaller jars or bottles, usually covered. Dried food materials, such as onions, garlic, chili peppers, and other seasonings, might be hung from the roof in a basket. Paddy (unhusked rice) was usually kept in a large bin of matting or wood.

In a few homes, a clay water jar stood in the kitchen or nearby, but more often foods were

Family at meal time

washed, and cooking water obtained at the canal or fish pond. Rainwater, collected and stored in jars, was preferred for drinking, but in the dry season families had to resort to water from the canal or fishpond for drinking as well as food preparation. There were no deep wells in the area.

Some garbage was fed to animals; the remainder was not burned or buried, but was thrown either into the canal or elsewhere (2).

Meal Patterns[3] *and Typical Thai Dishes*

Food was commonly prepared twice a day, in the morning and late afternoon. The meal pattern was the same for breakfast and dinner, with rice being the principal item in every meal. In Thai, the general term meaning "to eat" is translated literally "to eat rice," and all food items are divided into two classes: rice and "with rice."

Breakfast preparation was begun early if food was to be offered to the priests, but family members might eat at various times during the morning: the husband before or after he went to the field; older children, before school time; babies and small children, when someone had time to feed them; and so on. Preparation of supper might be started anytime after 2:30 P.M. Family members more often ate together at the evening meal than at breakfast. Except during heavy work seasons, adults often ate just the two principal meals, but small children ate whenever hungry.

The homemaker, or older daughter if there were one, was usually responsible for meal preparation, but all members of the family who were old enough to help, learned to cook. A girl or boy could cook rice "as soon as he could lift the rice pot," i.e. at six or so; by age twelve, he could prepare a creditable meal. Committees of school children, ages seven to

[3]Suvarnakich (6) described the Thai diet in a general way, and Sharp *et al.* (1) summarized the small amount of information on diet in Bang Chan obtained during the preliminary study in 1948-49.

fourteen years, cooking a special meal on the school grounds, prepared a variety of dishes with ease, thus giving evidence of the home experience these children had had (7). Responsibility for food preparation increased with age up to about fifteen years, after which the young people joined other able-bodied family members in field work during the busy seasons.

The principal processes used in food preparation were cutting food into bite-size pieces, pounding spices and flavoring materials, grating coconut, straining, boiling, and sautéeing in a small amount of fat. The kitchen had no oven. A stick or metal support over the fire was sometimes used to roast fish of appropriate size or field rats. Bananas might be baked in the skin on a rack over the fire.

PREPARATION AND SERVICE OF MEALS

To help the reader visualize meal preparation and service in a village home, we will first describe breakfast preparation in one household. By 5:15 A.M., the fire had been lighted. Using a tin can, the twelve-year-old daughter measured rice into the clay rice pot. She took it to the canal, washed the rice twice, then covered it with an excess of water and put it on the fire. About 25 min. later, the mother removed the cover, stirred the rice once, then replaced the cover, allowing the rice to cook a little longer before she drained off the excess water. A little of the rice water was set aside for the baby, the rest was poured into the dog's dish. The rice left from the previous evening meal was added to the rice pot, which was then put back on the stove for a few minutes.

Meantime, dried chili peppers had been soaked in water, and the mother crushed and pounded them in the mortar with some onion, garlic, shrimp paste, and salt. The varied seasonings used liberally in Thai cookery are pounded fresh for each meal.

The daughter drained the water from a coconut into the dog's dish and split the coconut in half. Seated on a low wooden stool she deftly grated the coconut meat by pushing each half over a toothed iron scraper which was attached to one end of the stool. With a coconut shell dipper, she added a little water to the grated coconut, worked and squeezed the mass in her fingers, then poured the milky water through a fiber strainer into a kettle. She added successive portions of water and squeezed the grated coconut several more times, thus obtaining almost three times the original weight of coconut as "coconut milk."

By this time, the rice had been taken from the stove, a few sticks of wood were added to the fire, and the kettle of coconut milk was put on to heat at about 6:15 A.M. Twenty min. later, the pounded seasonings were added, with a spoonful of palm sugar, and the cooking continued. Lastly, swamp cabbage, which the daughter had gathered from the canal, and dried salted fish were put into the pot.

At 6:50 A.M., the curry was taken from the fire. Bowls of rice and of curry were then arranged on a tray for the small boy to take to the landing to be offered to two priests who would shortly pass that way. While the mother nursed the baby, the older daughter set out bowls of rice for the other school-age children and herself. A bowl of curry, with a spoon for serving, was placed in the center where all could reach it.

Each one had a spoonful of curry beside his rice. To take more than that at one time would appear greedy. Enough rice for a bite was pressed together with the fingers of the right hand, so that grains would not be scattered as they were conveyed to the mouth. The curry was eaten by touching one side of the rice ball to it.

When the baby had finished nursing, the mother mixed rice water with some rice in a bowl and fed it to him. He was too young to have the highly seasoned curry. The older children rinsed their bowls and turned them upside down to dry, put some rice and curry into a tiered lunch pail, and were off to school in their small boat. The mother had her breakfast later, when the father returned from doing early chores. A small amount of rice was left over from breakfast. This and the refuse from the meal preparation were scraped through a gap in the floor boards, to be snatched up by the chickens.

"WITH-RICE" DISHES

In Bang Chan, three or four "with rice" dishes were usually prepared during the day, but the number and kind varied in different families and according to season. Fish was second in importance to rice, but the typical "with rice" preparation, whether "hot" or mild, contained more than one food item in addition to a variety of spices and flavoring materials. One or two of the "with rice" dishes would usually be "hot," i.e., highly seasoned with fresh or dried chili peppers. Curries belong to this category, but may be designated as either "hot" or "sour." The latter have crushed tamarind added, but contain less chili and spices. Vegetables, if used, were added when the cooking was nearly finished.

A hot sauce, *nam prik*, made of shrimp paste, chili, garlic, and other spices ground to a smooth consistency in a mortar and then mixed with lime juice, sugar, and salt or fishsoy, was called by one informant the everyday food of the villagers. When vegetables were eaten raw or cooked without seasoning, *nam prik* was always served with them. If the poor man had nothing else to eat with his rice, *nam prik* would make it more palatable.

Mild dishes included panned vegetables; meat or eggs cooked with small amount of fat and a variety of spices and condiments (including black pepper but not chili); fish, roasted or boiled; vegetables

Vendor of cooked foods on temple grounds during a festival

cooked in coconut milk or water without seasoning, or served raw.

Judging both from meals prepared in the eleven households studied and from the school children's records, some protein-rich food, usually fish, was generally eaten at each meal, but the amounts per person might be small. Some children had no vegetables, and only about one-fourth of the vegetables mentioned in the children's records were green or yellow. Except for the occasional use of pineapple or unripe papaya in curries, fruits were not included in meals, but were eaten by many children as snacks.

SNACKS

Between-meal snacks might be any available leftover food, fruit, or items bought from a vendor. Most school children ate snacks, which were usually different from foods eaten at a regular meal. Fruits and "desserts" were commonly eaten, although a variety of other foods, not a part of the usual Thai meal, were also listed. One could tell fairly well from the children's records what the vendors, who appeared on the school grounds daily, offered for sale on a given day. Some influence of temperature was apparent; thus ices and sirup over shaved ice were eaten more often during the hot dry season, and cooked foods, such as fried Chinese noodles, appeared primarily in cool weather. Seasonal fruits might be picked from the home garden, and items such as lotus seeds were gathered wherever the children found them. Some children carried food to school, but many ate no regular lunch.

The number of snacks recorded by individual children did not, however, appear to be related to whether or not they had eaten lunch. For example, among the 76 children who provided 24-hr. food records during May 1953, the average number of snacks recorded by the 39 children who ate a regular lunch and the 37 who did not, was about the same, i.e. a little over three per child.

Sources of Food

HOME PRODUCTION, STORAGE, AND PRESERVATION

Rice. Although nearly a third of the households owned a home rice mill, undermilled or home-pounded rice was not widely used. Information on this point was obtained for 333 of 336 "kitchen-unit"[4] households in the village. Of these, 4 consumed home-milled rice only, 51 used home-milled rice in major part, 78 in minor part, and 199 not at all (3). Most families took paddy to the mill when water in the canal was high enough so that it could be transported by boat. No family in Bang Chan used rice polishings for human food.

Fish. Next to rice, fish constituted the most abundant food in the diet in Bang Chan. Either fresh or preserved, they were available throughout the year. During heavy work seasons, many families purchased fish from vendors. Every house had a pond, from which fish were taken as needed, sometimes—for convenience—several at a time, to be kept alive in a large pot near the house. By draining the pond, fish were harvested. Those caught in excess of immediate needs were preserved for later use.[5] Larger ones were commonly salted and dried; smaller ones were preserved as fermented fish. Small shrimp, which were caught in quantity during only about three weeks in February, were made into shrimp paste, an essential ingredient of Thai "hot" dishes. The liquid drained off from the mixture of fish or shrimp and salt in the first stage of preparing fermented fish or shrimp paste was used by some villagers to prepare fishsoy, a common condiment.

Eggs. Chickens were raised by about 90 per cent of the families, and over 70 per cent owned ten or more. Only 37 per cent of the households had ducks, and only 13 per cent had ten or more (3). Most of the eggs produced were sold.

Flesh Foods Other Than Fish. Production and use of meat was inhibited by Buddhist tenets which forbade the taking of life. Killing of poultry, fish, and so on, was tolerated among the relatively young, but was considered unsuitable to the aged who should be preoccupied with living virtuously. Vendors sold meat, such as water buffalo and pork, as well as fish. Actual butchering was done by Moslems or Chinese who did not object.

Since many villagers were unwilling to slaughter water buffaloes, even when they became aged and useless, such animals were commonly kept until they died. Animals which had died of old age or disease were not, however, regarded by Thai Buddhists in Bang Chan as unfit for human consumption, but Moslems were forbidden to eat them. Some Moslems reported offering dead animals to Buddhists in barter for other materials. In 1955, only five house-

[4]In some large houses, two related family groups lived together, but maintained separate kitchens.

[5]Procedures are briefly described by Hauck *et al.* (4).

holders in Bang Chan raised hogs, and four of these had one or two only (3). Moslems ate no pork.

Poultry was not commonly used for food. It was the poor man's "feast" food suitable for guests.

Various wild creatures were used for food. Eels, frogs, turtle, cobra, and other snakes were used for curry, some for special parties for men. Field rats, available all year, were roasted.

Vegetables and Fruit. Although kitchen-gardening had been encouraged by the Thai government, vegetables and fruit were grown in Bang Chan to a limited extent only. Every family had some sort of kitchen garden, but seasonings and chili were more commonly grown than vegetables and fruit.

In a typical farm garden in Bang Chan, one would find bananas and a number of plants used for seasoning curry, such as various kinds of chilies, lemongrass, bergamot, of which both rind and leaves are used, and galangal. Both sweet and holy basil were commonly grown. Some families grew one or more varieties of gourds and of eggplant, perhaps training them over a tree or trellis. The inflorescence of the banana was also used as a vegetable. Leafy vegetables were not commonly cultivated, but some families grew *phak kached (Neptunia prostrata)*, a green water plant, in gardens staked out at the edge of the canal or in a pool. Some had trees with edible leaves. Swamp cabbage, which grew wild along the edge of the canals, was the most common green leafy vegetable. In addition to bananas, a few families grew guava, jujube, star gooseberry, Manila tamarind, mango, and pineapple.

Increased home production of fruit and vegetables would in many cases require increasing the size of the home site by purchase, mounding, or both. Ordinarily, increased land for the kitchen garden was obtained only at the expense of some of the rice land. Water-ways, however, were public areas, and any convenient wide spot might be selected as a private garden, marked off with stakes.

FOOD PURCHASES AND CASH EXPENDITURES

Relatively few foods were purchased, but some of these, such as onion, garlic, limes, tamarind, coconut, and palm sugar, were so frequently used that without cash to buy them, villagers would have considered their diet monotonous. If their own supply of fresh and dried chilies, fishsoy, and shrimp paste was inadequate, these too would be bought. Other foods less commonly produced in Bang Chan were purchased for variety; for example, eggplant and white radish were bought by more than half the families that participated in the dietary study. Salted and pickled white radish and pickled bamboo shoots were the only preserved vegetables purchased and used frequently.

Cash expenditures for food were relatively small, the average cash cost being less than half a baht (a little over 2 cents) per capita per day (4, 8). Animal foods, being relatively expensive, accounted for more than a third of the cash spent, coconut a little less, vegetables about a fourth. Minor amounts went for palm sugar, fats and oils, spices, and miscellaneous.

Summary

The rice-producing village of Bang Chan, Thailand, and the annual cycle of activities in this community have been described as they relate to the food habits of the people.

Preparation of a typical meal is outlined. Rice was essential, and one or more "with-rice" dishes was included in each meal. For adults, except during the heavy working seasons, two meals a day were usual.

Most of the food was home produced, caught, or gathered from the canal. Next to rice, fish was the most abundant item in the diet. Every family had a kitchen garden, but seasonings and chili were more commonly grown than fruit and vegetables. Fruits were seldom included in meals, but were eaten as snacks, primarily by children.

References

(1) SHARP, L., HAUCK, H. M., JANLEKHA, K., AND TEXTOR, R. B.: Siamese Rice Village. A Preliminary Study of Bang Chan 1948-1949. Bangkok, Thailand: Cornell Research Center, 1953.

(2) HAUCK, H. M.: Aspects of Health, Sanitation and Nutritional Status in a Siamese Rice Village. Studies in Bang Chan 1952-54. Cornell Thailand Project, Interim Reports Series, No. 2; Data Paper: No. 22 Southeast Asia Program. Ithaca, N. Y.; Dept. of Far Eastern Studies, Cornell Univ., 1956.

(3) GOLDSEN, R. K., AND RALIS, M.: Factors Related to Acceptance of Innovations in Bang Chan, Thailand. Analysis of a Survey Conducted by the Cornell Cross-Cultural Methodology Project, May 1955. Cornell Thailand Project, Interim Reports Series, No. 3; Data Paper: No. 25. Southeast Asia Program. Ithaca, N. Y.; Dept. of Far Eastern Studies, Cornell Univ., 1957.

(4) HAUCK, H. M., SUDSANEH, S., AND HANKS, J. R.: Food Habits and Nutrient Intakes in a Siamese Rice Village. Studies in Bang Chan, 1952-1954. Cornell Thailand Project, Interim Reports Series, No. 4; Data Paper: No. 29. Southeast Asia Program. Ithaca, N. Y.; Dept. of Far Eastern Studies, Cornell Univ., 1958.

(5) HAUCK, H. M., AND SUDSANEH, S.: Food intake and nutritional status in a Siamese village. J. Am. Dietet. A. 35: 1149, 1959.

(6) SUVARNAKICH, K.: The Thai diet. Nutrition Rev. 8: 289, 1950.

(7) HAUCK, H. M.: Kitchens in Thailand and a Thai picnic. J. Am. Dietet. A. 29: 276, 1953.

(8) JANLEKHA, K.: A study of the economy of a rice growing village in central Thailand. Unpublished Ph.D. thesis, Cornell Univ., 1955.

Food Intake and Nutritional Status in a Siamese Village[1]

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WHEN THIS study was undertaken in the fall of 1952, little published material was available on food habits in Thailand. Suvarnakich (1) had described the Thai diet in a general way and reported on the food intake of a group of soldiers, and a brief report of previous observations in Bang Chan was available (2). Since then, data on dietary surveys in the Bangrak District of Bangkok and in the northern and northeastern parts of Thailand have been published (3, 4). This study was part of an intensive investigation designed to define some of the problems in changing cultural behavior, including food and health habits, of the peasants. The Bang Chan community, the annual cycle of activities, and the food habits of the people have been briefly described in the preceding paper (5). The purpose of this report is to present information on food and nutrient intakes in eleven households, and on nutritional status of their family members.

Procedures

SELECTION OF THE SAMPLE

The suggestion of Grant (6) that matched groups of contrasting economic or other status be studied appeared to be appropriate to the situation. Medical inspection designed primarily to discover possible signs of nutritional deficiency had been carried out in advance of the family dietary study. Our hope was to be able to select from the random sample of families thus inspected (7) one group of families (A) in each of which several members had clinical signs which might be evidence of malnutrition, and a second group similar in age and sex distribution (B) in each of which the members were largely or wholly free from such signs.

When the medical inspection of the random sample was complete, however, too few families were found to meet our criteria for inclusion in Group A, i.e., the apparently less well nourished families. Additional households for this group were located by checking the list of school children, all of whom had been examined (7), for instances in which two or three children in one family had signs possibly indicative of malnutrition. The remaining members of their families were then examined. Families in Group B were chosen from the random sample.

The groups selected for study included eleven households, six in Group A and five in Group B, with thirty members in each group, paired so far as possible according to age and sex. When the survey was begun, however, two additional members were found in the households in Group A and seven additional members in Group B. These were relatives and hired helpers who remained in the households throughout the survey year. The plan for matching was then rearranged so that thirty-two reasonably well matched pairs were obtained (8).

Because of the five additional unmatched persons in Group B—males, ages twenty-three, fifteen, and four years, and women, ages seventy-nine and eight-two years—some means was sought of checking the validity of comparing calculated per capita food and nutrient intakes for the two groups. By selecting matched groups differing in apparent nutriture, we had hoped to avoid comparing calculated

[1]Received for publication June 10, 1959.

[2]The authors are indebted to Dr. Anusith Rajatasilpin and Miss Sapha Indrasud, whose services in connection with the medical inspection were provided by the Food and Drug Administration, Bangkok, through the courtesy of its director, Dr. Yong H. Chutima. Most helpful information concerning techniques which might be used in carrying out dietary studies was provided by Miss M. W. Grant of the Applied Nutrition Unit, London School of Tropical Medicine. Dr. Amara Chandrapanond suggested adaptations suitable to the local situation. The generous cooperation of the members of households participating in the dietary study is gratefully acknowledged. For the period of her field study, 1952-53, the senior author received an award for advanced research from the United States Education (Fulbright) Foundation in Thailand.

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Research team enroute to headquarters during the wet season

nutrient intakes with an arbitrary standard, but comparison of estimated per capita nutrient needs of the two groups appeared to be one means of checking their probable comparability, even though their members were not all matched as originally planned. By modifying Nicholls' (9) allowances for people in the tropics, taking into account recommendations of the Food and Nutrition Board (10) and of the FAO Committee on Caloric Requirements (11), a table of allowances thought to be conservative for Thai people in Bang Chan was devised (8). Differences in estimated per capita allowances for Groups A and B were trivial; hence we felt justified in comparing the estimated food and nutrient intakes of the groups as originally planned, even though Group B contained five persons not matched with persons in Group A.

MEDICAL INSPECTION

Procedures for carrying out the medical inspection, and results of inspection of the school children and a random sample of village families have been reported previously (7). Additional persons included in the original plan for matched groups were examined in the same way.

COLLECTING DATA ON FOOD CONSUMPTION

After pretesting proposed procedures, each family was told in a preliminary interview what the observer wished to do and in what ways family members would be asked to cooperate. All families chosen consented to participate in the study. Observations on each family included food intake for a 24-hr. period, four times during the year: twice during the rainy season, and once each during the cool and the hot, dry seasons. The schedule used and guides for the observer who carried out the dietary study have been given elsewhere in detail (8).

On the basis of experience during the pretest, the observer began the 24-hr. observation with an unannounced visit in the afternoon, in time to see the preparation for the evening meal. This proved to have several advantages. A householder whose home had been visited at the evening meal and who anticipated the observer's return before breakfast could restrain the dog, if necessary; or, the homemaker might postpone washing the rice until the observer arrived to weigh it. Without such cooperation by the homemaker, our records would have been much less complete than they were. Since few village families had clocks, the time when the homemaker said she would start breakfast was always approximate.

Weighing cooked food

Foods were weighed in both the raw and cooked states, and foods given to priests, fed to animals, leftover and so on, were weighed so that the actual amount eaten by the family could be calculated. Previously cooked foods included in the survey meals were weighed, and raw weights estimated from information obtained in other observations. If possible, snacks were weighed. School children and others who ate snacks away from home were asked to report them to the observer, and weights were estimated.

CALCULATING NUTRITIVE VALUE

The edible portion of each raw ingredient consumed was calculated by adjusting the gross amounts according to the use made of the cooked food and the number of persons present (8).

Few analyses of foods used in Thailand had been made in local laboratories, and most of these were for proximate composition only. Agriculture Handbook No. 34 *Composition of Foods Used in Far Eastern Countries* (12), was the primary source

Taking blood sample of school child for hemoglobin determination

of information, supplemented by values from other sources (cited in 8). Figures used were for the edible portion of raw food, or the food as used in food preparation, i.e., dry salted radish, shrimp paste, and so on, with no allowance for cooking losses. For a few foods, no values could be found or imputed.

Values for coconut milk did not seem to be appropriate for the product as prepared in Bang Chan. Families in Group A used considerably more water in proportion to coconut meat in making coconut milk than families in Group B, hence a single set of figures could not be used for both groups. "Expressed coconut milk" which had been analyzed in Hawaii (13) appeared to be similar to "coconut cream," as prepared in the village. The composition of coconut milk was, therefore, estimated by assuming it to contain carbohydrate, protein, and fat in the same proportions as "expressed coconut milk" but to be more dilute (8).

Results and Discussion

Although our sample was not stratified with respect to economic condition, the families in Group B, i.e., those chosen for apparently better nutriture, proved to be on the average more prosperous than those in Group A. They owned and worked more land, owned more water buffalo, and were able to regularly offer food to more priests. Such offerings always included cooked rice (the average for twenty instances observed was about 600 gm.) and usually some "with-rice" dish as well.

NUTRITIONAL STATUS

A summary of observations relating to nutritional status, together with information on sex and age of persons examined, is presented by households in Table 1. In Group A, nineteen of the thirty persons examined had a total of thirty-six possible signs of nutritional deficiency, if hemoglobin values of 11 gm. or less are so considered. In Group B, eight persons had a total of nine such signs. The only person in this group found to have a low hemoglobin value had hookworm. Beriberi was the one frank deficiency disease observed while these studies were underway. Among the families studied, one person in Household 12 had beriberi. In Household 67, the mother had lost three of her six children when they were three or four months old, with symptoms such as convulsions and voiceless crying suggestive of infantile beriberi.

TABLE 2 Average calories and nutrients available per capita per day to Groups A and B

NUTRIENTS	ESTIMATED AMOUNTS AVAILABLE*		ALLOWANCES	
	Group A	Group B	Group A	Group B
Food energy (calories)	1731	2009	1935	1955
Protein (gm.)	50	59	59	59
Fat (gm.)	14	22	—	—
Carbohydrates (gm.)	342	384	—	—
Calcium (mg.)	129	194	650	650
Phosphorus (mg.)	847	895	—	—
Iron (mg.)	6.9	8.4	8.7	8.8
Vitamin A (I.U.)	2047	1340†	2522	2548
Thiamine (mg.)	0.68	0.76	0.93	0.96
Riboflavin (mg.)	0.37	0.28	1.07‡	1.06
Niacin (mg.)	11.3	11.5	9.3	9.6
Ascorbic acid (mg.)	27	23	24	24
Thiamine: calorie ratio	0.39	0.38		
Thiamine: non-fat calorie ratio	0.42	0.42		

*Estimates based on values for edible portion without allowance for cooking losses. Values not found for mineral and/or vitamin content of a few common foods, such as coconut milk, shrimp paste, and fishsoy.

†No values found for yellow flowers of *Sesbania roxburghil.*

‡Slightly higher allowance for Group A because of presence of one more nursing mother in this group than in Group B.

DIETARY SOURCES OF NUTRIENTS

In Table 2 the estimated calories and nutrients available to the two groups of families are shown, together with the estimated allowances. On the average, calories, protein, iron, niacin, and ascorbic acid in the diets of persons in Group B, approximated or exceeded the conservative allowances. For Group A, this was true only for niacin and ascorbic acid, the calories being 11 per cent, protein 15 per cent, and iron 21 per cent below the allowances. Estimated intakes of riboflavin, calcium, vitamin A, and thiamine fell far short of the allowances.

From Table 3, in which the average consumption of common foods is shown, one can see that the diet consisted of almost a pound of rice per person per day, with a little over half a pound of all other foods

TABLE 1 **Principal findings of medical inspection**

HOUSEHOLD NUMBER	SEX	AGE	HEMO-GLOBIN	POSSIBLE SIGNS OF NUTRITIONAL DEFICIENCY
		GROUP A		
		yr.	*mg./100 ml.*	
2	M	63	13.0	knee and ankle jerks absent
	F	60	11.0	*
	M	23	16.0	knee jerk absent
	F	10	13.0	hair dry and staring
	M	5	14.0	
12	M	52	14.5	knee and ankle jerks absent*
	F	49	11.0	knee and ankle jerks absent*
	M	21	13.5	knee and ankle jerks absent; angular stomatitis; tongue fissured and papillae hypertrophied; diagnosed as beriberi
67	M	33	13.25	knee and ankle jerks absent
	F	32	14.5	knee and ankle jerks absent
	M	11	14.5	xerosis of skin
	F	7	14.5	xerosis of skin
	M	1		
103	M	38	14.75	
	F	35	12.5	*
	M	12	14.0	xerosis of skin; liver enlarged
	M	10	13.5	xerosis of skin
	F	6		
	F	3		
	M	3 mo.		
215	M	41	14.5	
	F	37	9.0	*
	F	12	12.5	
	M	10	13.0	geographical tongue
	F	8	12.5	phrynoderma
222	M	50		†
	F	44	10.75	*
	F	13	12.5	hair dry and staring, brownish; xerosis of skin
	M	10	13.5	angular stomatitis; papillae of tongue hypertrophied; gums swollen and red; phrynoderma, xerosis of skin
	F	8	13.75	
		GROUP B		
16	M	48	12.5	knee jerk absent
	F	44	‡	*
	M	25	16.25	
	F	22	‡	
	M	20	14.75	
	M	18	14.75	
	F	10	‡	
	M	7	12.5	
20	M	53	12.0	knee and ankle jerks absent
	F	15	14.0	
21	M	64	15.5	excess conjunctival tissue*
	F	59	14.0	*
	M	20	13.5	
	M	15	15.5	
23	M	39	16.0	excess conjunctival tissue*
	F	38	13.0	
	M	12	10.5#	
	F	10	14.0	xerosis of skin
	F	8	12.5	
	M	6	13.25	
	M	4	13.0	
	M	2		
25	M	43	14.5	*
	F	39	15.0	*
	F	82	13.0	*
	F	16	14.0	
	M	13	12.5	knee jerk absent
	M	10	13.0	knee jerk absent
	M	4		
	M	3 mo.		

*Surface of tongue obscured because of betel chewing.
†Not available for examination.
‡Unwilling to have blood sample taken.
#Stool positive for hookworm.

combined: about 3½ oz. of animal foods, chiefly fish; an equal amount of vegetables, mostly non-leafy; less than an ounce of fruit; and small amounts of coconut, fats, and sugar. For items used by all or most families every day, such as rice, fresh fish, chili, coconut products, and sugar, the figures represent approximately the usual daily per capita consumption. For items used less frequently, the figures are correspondingly less than the usual amount eaten. Thus, sweet potato, which is represented as 18 gm. per day per person in Group A, actually appeared on three records only. One family of eight persons ate 1200 gm. sweet potato at one meal and a substantial amount later the same day. A few common foods accounted for most of the nutrients in the diets of both groups.

Rice and Other Cereals. Rice provided over four-fifths of the caloric intake and more than half of the protein. Much of the difference in caloric and protein intake of the two groups was due to greater rice consumption by Group B. Rice was also the most significant source of phosphorus, iron, thiamine, riboflavin, and niacin in these diets. Although the calcium content of rice is low[4], about 23 and 16 per cent of the estimated calcium content[5] of diets of Groups A and B respectively came from the cereals, i.e., rice and small amounts of other grain products, such as wheat bread, and popcorn. Since over four-fifths of the thiamine content of the foods used by each group came from rice, and the thiamine loss when rice is cooked as it was in Bang Chan has been estimated as 75 per cent or more (14), the actual per capita intake of thiamine probably fell short of the 0.2 to 0.3 mg. per 1000 calories which the Food and Nutrition Board (15) considers to be minimal for adults. That the diets of some of these people were in fact dangerously low in thiamine is attested by the occurrence of beriberi and history of beriberi among them.

Animal Products Other than Pork Fat. Fish and other foods of animal origin furnished about two-fifths of the protein in the diets of both groups. From 20 to 30 per cent of the riboflavin and niacin and substantial amounts of phosphorus and iron were provided by this food group, also. The estimated contribution of vitamin A from animal sources was small. Although all eleven households raised chickens, and three of them had ducks also, yet three families used no eggs on any of the survey days. Specific analyses for most of the varieties of fish used in Bang Chan were not available, hence many calculations were made on the basis of average values for "fat fish," "lean fish," and "dried fish," and the possibility that some of the available sources of fish provided significant amounts of vitamin A should not be overlooked.

TABLE 3 Average daily consumption per capita of common foods by Groups A and B

FOOD	Group A	Group B
	gm.	*gm.*
Rice		
Home-pounded	93	50
Polished	307	388
Total	400	438
Fish, fresh	57	72
Dried	6	8
Other products	12	12
Meat and poultry	10	5
Eggs	4	5
Vegetables, green		
Swamp cabbage	12	9
*Phak kached**	3	3
Sweet basil	4	3
Miscellaneous	1	17
Total	20	32
Sweet potatoes	18	†
Other vegetables		
Gourds	20	16
Eggplant	13	5
White radish	7	12
Chilies	4	3
Onion and garlic	5	3
Miscellaneous	14	20
Total	63	59
Fruits		
Bananas	3	†
Lime, tamarind, and madan	3	3
Miscellaneous	15	8
Total	21	11
Coconut	14	26
Fats and oils	4	6
Sugar, palm	5	11

* *Neptunia prostrata* †Less than 0.5 gm.

Fermented fish are reported to contain 126 mg. calcium per 100 gm. (16), but the amounts eaten were relatively small. Only two families in Group A used a total of 217 gm. of fermented fish on survey days, and two families in Group B used a total of 608 gm. The tiny dried fish which are eaten whole were not used by these families on any of the forty-four survey days. Despite the apparently low calcium intake, no evidence was noted, other than short stature and small bones, which might suggest a calcium deficiency. The extent to which man may adapt to a low-calcium diet is still undetermined.

The contribution of animal products other than fish to the nutrient content of these diets was small. Eggs were eaten occasionally; pork and beef were bought infrequently and in small amounts by some families. One family, only, ate chicken; other meats eaten on survey days included buffalo, frogs, eels, and field rats.

Vegetables. More than three-quarters of the esti-

[4]According to Knudson (16), the addition of calcium carbonate to rice during milling was not practiced in Thailand.

[5]No attempt was made to estimate calcium intake from betel chewing, although this might be considered a dietary source of calcium. Six of fifteen persons twenty years of age or older in Group A were betel chewers, whereas among fourteen persons over age twenty in Group B, nine chewed betel regularly and one occasionally.

mated vitamin A value of these diets was provided by green leafy vegetables, although the pale yellow sweet potatoes, eaten in quantity by one family in Group A, increased the vitamin A value from non-leafy vegetables substantially. Families in Group A used more swamp cabbage, a wild aquatic plant, whereas families in Group B used a greater variety of greens, especially leaves from a number of trees. Legumes, such as mung beans and peanuts, served primarily as occasional snacks for children.

Fruit. Bananas were grown by all families participating in the study but were eaten only occasionally, primarily as snacks. Tamarind and lime were used often and madan fruit occasionally in making sour curry and chili sauce. Fruits are relatively abundant in Thailand, the year round, yet they made minor contributions to the diets of families studied.

Coconut. Coconut meat and its products, coconut milk and coconut cream, were used almost daily in the participating households. These products contributed about one-fifth of the total fat of the diet for Group A, more than fats and oils as such.

Fats and Sugar. Only about 9 to 10 per cent of the total calories came from fat. The visible fats, coconut oil and pork fat, provided about 1 per cent of the calories for Group A and 3 per cent for Group B. With such a low intake of fat, absorption of carotene might not be efficient. The linoleic acid content of the diet was probably low, also. Phrynoderma, which was noted in twelve children (7) may be due to essential fatty acid deficiency (17).

Compared with Western diets, the consumption of sugar in Bang Chan was almost negligible. Palm sugar provided only 1 or 2 per cent of the calories.

Spices. Spices were commonly used in food preparation, particularly in hot dishes (i.e., those made with chilies) but little information on their nutritive value is available.

NUTRIENT INTAKES OF INDIVIDUAL FAMILIES

When the average intakes of each household were compared with the estimated allowances based on the composition of the family, one household in each group failed to meet allowances for any of the nutrients. Others met or exceeded the allowances for two to five items, usually because of a generous intake on two or three of the four survey days. Niacin was the only nutrient which appeared to be fairly liberally supplied in the daily dietary in any of the households surveyed. On the average, the niacin allowance was met by nine of the eleven households, three of which met or exceeded this allowance on each day they were visited. Seven households met the allowances for ascorbic acid because of a fairly liberal intake on two or three survey days each, a total of sixteen of the twenty-eight days on which these households were visited. In respect to niacin and ascorbic acid intakes, no clear differences between the individual families in Groups A and B were noted. The intake of calories, protein, and iron, however, for the two groups clearly differed when individual families were considered, as they did on the average (Table 2). Thus only one of six households in Group A met the allowance for protein, and this household exceeded it on only two of four survey days. In contrast, the average intake of four of five households in Group B met the protein allowance and these households exceeded it on a total of ten survey days.

TABLE 4 Calculated daily nutrient intake per capita for two households, compared with estimated allowances

NUTRIENT	HOUSEHOLD 215 (5 persons)		HOUSEHOLD 16 (8 persons)	
	Intake	Allowance	Intake	Allowance
Calories	1905	1955	2330	2160
Protein (gm.)	58	60	68	61
Calcium (mg.)	76	650	155	620
Iron (mg.)	5.7	9	10.8	9
Vitamin A (I.U.)	182	2500	2140	2700
Thiamine (mg.)	0.59	0.90	0.83	1.05
Riboflavin (mg.)	0.22	1.04	0.37	1.06
Niacin (mg.)	11.9	9	14.1	11
Ascorbic acid (mg.)	4	24	36	25

In respect to calcium and riboflavin, intakes of all households were low. Only two had an intake of vitamin A which met the conservative allowance, and only one met the thiamine allowance, even when no account was taken of cooking losses.

The contrast in nutrient intake between two households is shown in Table 4. For Household 215 (Group A), niacin intake exceeded the allowance; caloric and protein intakes approximated them. Intakes of all other nutrients were very low. In Household 16, Group B, per capita intakes for all nutrients exceeded those of Household 215, and calories, protein, iron, niacin, and ascorbic acid exceeded the conservative allowances. Members of Household 16 had about 10 per cent more rice than those in Household 215, about one-fourth of it home pounded. This difference alone accounted for much of the difference in caloric, protein, and thiamine intakes. Total food of animal origin was about the same for both groups, but Household 16 averaged 10 gm. egg per person per day, compared with 1 gm. for Household 215. For green vegetables, the amounts were 25 and 2 gm.; other vegetables, 58 and 15 gm.; and fruit, 30 and 14 gm. for Households 16 and 25 respectively.

In summary, although the estimated average nutrient intakes of Group B were in general more favorable than those of Group A, the contrast was not striking. Perhaps we should have anticipated this from the fact that the groups did not present a sharp contrast in apparent nutriture, i.e., at least

one member of each household in the apparently better nourished group exhibited one of the possible signs of malnutrition.

Although in general, the signs observed were such as might be associated with the dietary inadequacies noted on the survey days, in many instances the signs observed in an individual could not be related to apparent deficiencies in the family diet. Thus in Household 222, in which the ten-year-old boy had angular stomatitis and swollen red gums, riboflavin in the family diet was low, but no more so than for several other families, and the ascorbic acid content was relatively good, 41 mg. per person per day. We have no information, however, on the food habits of this boy as compared with other family members. In Household 12, with the poorest over-all nutrient intake, all three members had signs of nutritional deficiency, and one had manifest beriberi. Judging by both the apparent nutriture and by their estimated nutrient intakes, both groups were in need of dietary improvement.

The calculated per capita nutrient intakes for the two groups of households studied in Bang Chan are not directly comparable with values reported by Chandrapanond (4) for three regions in Thailand, since, except for the northern region, the populations she studied had a smaller proportion of children under fifteen years of age. Important observations appear, however, to be similar. Niacin was most liberally supplied of the vitamins; ascorbic acid intake, while not liberal, was adequate for scurvy prevention. Vitamin A and calcium intakes appeared to be low, though no evidences of calcium deficiency were reported. The relatively low thiamine content of food was calculated without allowance for cooking losses and, as in Bang Chan, the common practice of cooking rice in excess water would markedly reduce the intake. For the Bangrak District of Bangkok and for the northeastern region, Chandrapanond found the riboflavin content of the diets to be low. In the north, where a medical inspection was carried out in connection with the dietary study, beriberi, nutritional glossitis, and hyperkeratosis were noted.

SEASONAL VARIATIONS

Food was cooked twice on each survey day in three of six households in Group A and three of five households in Group B. Heavy farm work or vending which kept the mother away from the house sometimes accounted for once-a-day food preparation.

The time for meal preparation tended to vary with the number and type of "with-rice" dishes prepared. The "hot" dishes usually required more preparation time than the mild ones, because of the time needed to pound spices and to cut up ingredients. Once-a-day food preparation reduced the time required for cooking. More time was apt to be spent on food preparation when the homemaker was least busy with farm work or other work outside the home.

Average per capita cash expenditures for food on survey days ranged from 0.26 to 0.90 baht[6] (mean 0.49) for households in Group A and from 0.19 to 1.00 baht (mean 0.45) for households in Group B. In both groups, cash expenditures tended to decrease as the survey year progressed. Most of the rice was sold at the end of Round III[7]. The cash went for capital investment, not food, during Round IV. With time to drain ponds and to fish intensively, people did not need to buy fish and meat which were relatively expensive.

The average caloric intake was higher during Rounds I and III, when relatively heavy farm work associated with planting and harvesting was under way, than during Round II, the growing season for rice, or Round IV, when the harvest was in, and the earth too dry for preparation for the next planting. Greater consumption of rice was largely responsible for the higher caloric intake in Rounds I and III. Not only calories, but phosphorus, thiamine, and to some extent protein, varied with the rice consumption. During Round IV, however, greater consumption of fish when fish ponds were drained accounted for the relatively higher protein content of the diets of both groups, even though caloric intake was not at its peak. At this time, animal foods provided 45 and 53 per cent of the total protein intake of Groups A and B respectively, whereas for the year as a whole, 37 and 40 per cent of the protein intake of these groups was of animal origin.

PRACTICES AS A BASIS FOR IMPROVEMENT

The first steps toward a better diet in Bang Chan are suggested by the best dietary practices observed. In almost every instance, when the family's intake of protein for the day met the recommended allowance, fish—fresh or preserved—was used in fair amounts. Occasionally, the use of duck eggs was noted in the diets which were higher in protein. More home consumption of eggs would be desirable, but their ready sale and acceptability for barter may present an obstacle to increased home use. Increased production would probably lead to some increased home use at least at the peak season. Duck eggs, which are less often sold, might be stressed both for this reason and because of their greater size.

In diets found to be best in vitamin A and as-

[6] At the time of the dietary study, 1 baht was equivalent to about 5 cents.

[7] Dates of the "rounds" of visits were as follows: Round I, May 26 through August 13, 1953; Round II, August 27 through November 19, 1953; Round III, November 26, 1953 through February 10, 1954; and Round IV, February 18 through May 8, 1954.

corbic acid, green vegetables made an important contribution. Among these, swamp cabbage and *phak kached (Neptunia prostrata)*, both aquatic plants, were most frequently used. A variety of edible leaves of trees were eaten by a few families; some used sweet basil as a vegetable rather than just a seasoning; pumpkin and sweet potato were familiar, but appeared in the diet less often than would be desirable. More green or yellow vegetables which mature when canals are low and aquatic plants no longer available, would be especially desirable. If increased production by most households[8] is not practicable, a few of the more successful gardeners might be persuaded to produce vegetables and fruits which would help to bridge the gap between rainy seasons.

Eating more fruit would help to tide over the dry season, particularly with respect to ascorbic acid. Fruits were commonly used as snacks, not at mealtime, hence snacks of fruit should be encouraged for adults as well as children. Bananas grew in all gardens and were available the year round, and more families could grow pineapple and seasonal fruits.

In five of six instances when the thiamine content of the diet, without taking account of cooking losses, appeared to be satisfactory, home-pounded rice was used; in the sixth instance, an exceptionally large intake of milled rice was the chief source. Some method of improving the major item of the diet, rice, is obviously fundamental if a better diet is to be commonly available. Since home-milling has persisted to some extent in Bang Chan, it might be encouraged, in some families. One highly respected headman continued to mill rice at home, hence the "prestige value" of white rice may not be so important in Bang Chang as it is among urban Thai, who sometimes regard undermilled rice as "prisoner's food."

The time and effort involved in home-milling, however, may deter those who have given it up from returning to it; and since deepening the main canal has made the mill accessible to more families the year around, a program based on the assumption that commercial milling of rice will increase is probably more realistic than an attempt to encourage the return to home milling where it has been abandoned. Efforts to improve the nutrient content of rice will be largely nullified, however, and much of its vitamin and mineral content will be discarded, so long as the practice of cooking rice in excess water persists. Possible approaches to the rice problem and other recommendations for improvement of the diet in Bang Chan have been considered in more detail elsewhere (8).

In Bang Chan, where frank deficiency disease is uncommon, improvements in health and nutriture may not seem spectacular. Improving nutrition, which implies changing attitudes, food habits, agricultural and sanitary practices, must be seen as a long-term goal, requiring continuing education.

[8]Tenant farmers may not be permitted to enlarge gardens by mounding at the expense of rice fields.

Summary

Two groups of households in Bang Chan, Thailand, were chosen for a dietary study, on the basis of contrast in apparent nutriture of their members. Beriberi was the only frank deficiency disease observed, but other signs of malnutrition were noted. As originally selected, members of the two groups were matched by age and sex so far as possible.

Food intakes of eleven households were observed for 24-hr. periods, on four days distributed throughout the year. On a per-capita basis, the average daily diet consisted of about a pound of rice, with a little over half a pound of all other foods combined: about 3½ oz. animal foods, chiefly fish; an equal amount of vegetables, mostly non-leafy; less than an ounce of fruit; and small amounts of coconut, fats, and sugar.

Rice provided over four-fifths of the caloric intake and more than half of the protein. Much of the difference in caloric and protein intake of the two groups was due to the greater rice consumption of the apparently better nourished group. Fish and other foods of animal origin furnished about two-fifths of the protein for both groups. More than three-quarters of the estimated vitamin A value of these diets was provided by green, leafy vegetables. Fruit made minor contributions to the diets. Intakes of fat and sugar were low in comparison with Western diets.

The estimated average nutrient intakes were in general greater for the group with apparently better nutriture than for the less well nourished group, but the contrast was not striking.

Niacin was the only nutrient which appeared to be fairly liberally supplied in the daily dietary in any of the households surveyed. The average intake of nine of the eleven households appeared to be satisfactory, and three met or exceeded a conservative allowance on each day they were visited. Riboflavin and calcium intakes of all households were low, as was the vitamin A value of most diets. The diets were probably low in linoleic acid content, although this was not estimated. The thiamine in the diets appeared to be borderline when calculated on the basis of raw food. Moreover, the usual method of cooking rice with excess water results in a large loss of thiamine and other water-soluble nutrients.

Improving food habits and nutritional status in Bang Chan implies changing the people's attitudes as well as the agricultural and sanitary practices, and must be seen as a long-term goal, requiring continuing education.

References

(1) SUVARNAKICH, K.: The Thai diet. Nutrition Rev. 8: 289, 1950.

(2) BISOLYAPUTRA, U.: A brief study of the diets of Minburi people in Thailand (Siam). J. Med. Assn. Thailand 32(5): 45, 1949.

(3) CHANDRAPANOND, A., AND RITCHIE, J.: A nutritional survey in North Thailand and its implications with regard to beriberi. J. Med. Assn. Thailand 35(5): 11, 1952.

(4) CHANDRAPANOND, A.: Food consumption of Thai people. J. Med. Assn. Thailand 38(2): 111, 1955.

(5) HAUCK, H. M., AND HANKS, J. R.: Food habits in a Siamese village. J. Am. Dietet. A. 35: 1143, 1959.

(6) GRANT, M. W.: Technique for the dietary section of a nutrition survey. London: Applied Nutrition Unit, London School of Hygiene and Tropical Medicine (University of London), 1948, p. 39.

(7) HAUCK, H. M.: Aspects of Health, Sanitation and Nutritional Status in a Siamese Rice Village. Studies in Bang Chan 1952-1954. Cornell Thailand Project, Interim Reports Series, No. 2; Data Paper: No. 22 Southeast Asia Program. Ithaca, N. Y.; Dept. of Far Eastern Studies, Cornell Univ., 1956.

(8) HAUCK, H. M., SUDSANEH, S., AND HANKS, J. R.: Food Habits and Nutrient Intakes in a Siamese Rice Village. Studies in Bang Chan, 1952-1954. Cornell Thailand Project, Interim Reports Series, No. 4; Data Paper: No. 29. Southeast Asia Program. Ithaca, N. Y.; Dept. of Far Eastern Studies, Cornell Univ., 1958.

(9) NICHOLLS, L.: Tropical Nutrition and Dietetics. 3rd ed. London: Baillière, Tindall and Cox, 1951, p. 476.

(10) FOOD & NUTRITION BD.: Recommended Dietary Allowances, Revised 1953. Natl. Acad. Sci.—Natl. Research Council Pub. No. 302, 1953.

(11) COMMITTEE ON CALORIE REQUIREMENTS: Calorie Requirements. FAO Nutritional Studies No. 5, June, 1950.

(12) LEUNG, W. W., PECOT, R. K., AND WATT, B. K.: Composition of Foods Used in Far Eastern Countries. USDA Agric. Handbook No. 34, 1952.

(13) MILLER, C. D., BAZORE, K., AND ROBBINS, R. C.: Some Fruits of Hawaii. Their Composition, Nutritive Value and Use. Hawaii Agric. Exper. Sta. Bull. 77, Jan., 1936.

(14) TMANGRAKSATVE, S., AND SRISUKH, S.: Thiamine in Thai rice. J. Pharmaceut. Assn. Thailand 84: 8, 1955.

(15) FOOD & NUTRITION BD.: Recommended Dietary Allowances, Revised 1958. Natl. Acad. Sci.—Natl. Research Council Pub. No. 589, 1958.

(16) KNUDSON, A.: Letter to the editor. Nutrition Rev. 13: 191, 1955.

(17) BAGCHI, K., HALDER, K., AND CHOWDHURY, S. R.: The etiology of phrynoderma. Histologic evidence. Am. J. Clin. Nutrition 7: 251, 1959.

Antibiotics in Milk

Usual treatment of cattle with mastitis in recent years has been by infusion of one or more antibiotic preparations into the udders of the infected cows. However, milk of such cows may contain antibiotic residues, particularly penicillin, for up to 72 hr. after the latest treatment. For this reason, the labels for such drugs must state that milk from treated cows must not be used for human consumption for at least 72 hr. after the latest treatment.

In 1954, 1955, and 1956, the Food and Drug Administration made market surveys to determine the incidence of antibiotic residues in fluid milk. In 1954, 3.2 per cent of the samples; in 1955, 11.6 per cent; and in 1956, 5.9 per cent contained penicillin. The highest concentrations found in 1954 and 1955 was 0.08 mcg. per milliliter; in 1956, 0.55 mcg.

Following the 1956 survey, a Medical Advisory Panel appointed by the FDA advised that, although antibiotics such as the tetracyclines, streptomycin, bacitracin, polymyxin, and neomycin should not be present in milk, their presence does not pose a public health problem. It was agreed, however, that penicillin is a highly active antigenic substance, and even the very small concentrations found in milk might well cause reactions in individuals highly sensitive to it. Such persons constitute something less than 10 per cent of the population.

It was the concensus that it is the failure of the dairy farmer to follow the labeling instructions of mastitis preparations that causes the major aduleration of milk. A program of educating the dairy farmer through the USDA's Extension Service was therefore initiated. Also, in addition to the statement regarding the forbidden time period which appears on the circular containing directions which accompanies mastitis preparations, the warning statement must now also appear on the label of each immediate container. The antibiotic regulations have also been amended to establish 100,000 units as the maximum quantity of penicillin that may be contained in each dose. Some preparations have previously contained up to 1,500,000 units.

Since the initiation of this stronger program, a significant decrease in the incidence of penicillin-contaminated milk has been achieved. A 1959 re-survey indicated 3.7 per cent of 1170 samples contained penicillin.—*Abstracted from "Antibiotics in Fluid Milk" by W. R. Jester, W. W. Wright, and H. Welch. Antibiotics and Chemotherapy 9: 393, 1959.*

History of Celiac Disease[1]

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THE RAPID and marked improvement of children with celiac disease when wheat, rye, oats, and barley are removed from the diet represents one of the most dramatic advances in diet therapy in this century. The harmful agent in these cereals is known to be associated with the protein fraction, chiefly with gliadin (1), but the compound responsible has not been identified. Attempts to identify the offending compound and the defect in children with celiac disease continue. Alvey *et al.* (2) note the free interchange of ideas with colleagues in both Holland and England and state that "trends in the work of each group have brought them to the idea that the basic defect in the coeliac child might be a specific alteration or absence of an enzyme, probably a peptidase normally produced in intestinal mucosal cells." As an alternative possibility, these authors suggest that removal of glutamine peptides from the liver may be impaired. With these relatively recent developments in mind, a review of the history of celiac disease assumes new interest, and the partial successes of the past can be viewed in relation to new knowledge.

Description and Distribution of the Disease

Celiac disease was first clearly differentiated in a short paper in the year 1888 by Samuel Gee of St. Bartholomew's Hospital (3). Little has been added by later writers to Gee's classical description of the digestive and many of the other symptoms of the disease. He wrote:

> There is a kind of chronic indigestion which is met with in persons of all ages, yet is especially apt to affect children between one and five years old. Signs of the disease are yielded by the faeces, being loose, not formed, but not watery; more bulky than the food taken would seem to account for; pale in color, as if devoid of bile; yeasty, frothy, an appearance probably due to fermentation; stinking, stench often very great, the food having undergone putrefaction rather than concoction . . .
>
> The onset is usually gradual, so that its time is hard to fix: sometimes the complaint sets in suddenly, like an accidental diarrhoea; . . . The patient wastes more in the limbs than in the face . . .
>
> The belly is mostly soft, doughy, and inelastic; sometimes distended and rather tight. Wind may be troublesome and very foetid. Appetite for food differs in different cases, being good or ravenous, or bad . . .
>
> At times the bowel complaint is overlooked: the wasting, weakness, paleness are what is noticed, and are thought to be due to another than the true cause . . .
>
> The course of the disease is always slow, whatever be its end; whether the patient live or die, he lingers ill for months or years. Death is a common end, and is mostly brought about by some intercurrent disorder; . . . While the disease is active children cease to grow; even when it tends slowly to recovery they are left frail and stunted.

Fifteen years after Gee's description appeared, Cheadle (4) noted excess fat in the stools and demonstrated it quantitatively.

A recent description of celiac disease as given by Andersen and Mike (5) is remarkably similar to Gee's original description. In 1955 they wrote:

> In this disease no anatomic abnormality of the digestive tract has been found. This infant also appears normal at birth, and if he is breast-fed he continues to do well for some time. If he is formula-fed, he usually becomes a "feeding problem" with vomiting or poor appetite—or perhaps he eats well and has episodes of diarrhea . . .
>
> These stools are pale, bulky, pasty or semi-fluid, and foul, often with an acid or decayed odor. They may be foamy and often contain identifiable fragments of vegetable or other food. After some weeks or months, the infant becomes thin, undersized, inactive, irritable, and pot-bellied . . .
>
> The breast-fed infants who develop celiac disease remain well while they are on mother's milk and for many months thereafter, and usually do not become ill until the second year . . .

Miller (6, 7) spoke of two types of celiac disease —the diarrheic or classical type and the non-diarrheic or milder type. He noted further that the pallor of the celiac stool was not due to deficiency of bile but rather that the stools were masked by an excess of fat, present chiefly in the form of fatty

[1]A portion of a study submitted in partial fulfillment of the requirements for the degree of Master of Science.

[2]The writer wishes to acknowledge the help and guidance given her by Hazel M. Hauck, Ph.D., Professor of Food and Nutrition, Cornell University.

acids. The excess of fat in the stools, he believed, was derived from unabsorbed food fat.

Parsons (8) in 1932 reported that "celiac disease was no respecter of persons, its victims being found in all grades of society". Huebner (9) reported earlier that he had seen celiac disease particularly among the socially favored, but he suggested that many patients reared under unfavorable circumstances probably succumbed before the characteristic clinical picture was well developed. A similar opinion was expressed in 1940 by Holt and McIntosh (10). More recently, Wyllie, Payne, and Beynon (11) commented on the apparent increasing prevalence of celiac disease when they stated: "The coeliac affection occurs among children of all financial grades of the population, making its appearance some time between the ninth month of life and the end of the second year. Its incidence has been on the increase since before 1939 partly, no doubt, due to a more frequent recognition of its features."

There is some disagreement as to the occurrence of celiac disease in children who have been breast-fed. Parsons (8) stated that "it has never been seen in an infant at the breast," and Jeans and Marriott (12) agreed that celiac disease is not found in breast-fed children. Others, notably Karlen (13), Fanconi (14), Brown (15), and Andersen and Mike (5) have reported instances of celiac disease occurring in children who had been breast fed. Brown found that approximately two-thirds of the ninety celiac children whom he studied had never been breast fed. He noted, however, that in infants who had been breast fed, the disease appeared on the average at sixteen months of age, while in the bottle-fed infants, it appeared on the average at ten months. He suggested that breast-feeding had a preventive effect or at least was responsible for delaying the onset of the condition. Andersen and Mike (5) concurred.

Celiac disease has been known to occur in twins (8, 14, 15) and a familial incidence has been reported by Andersen (5), Fanconi (14), and Brown (15). Fanconi and Brown have also noted that celiac children tend to appear at later maternal ages than do their siblings without the condition and also late in the birth order of the family. Brown noted in addition that children with celiac disease, who have had proper dietary control, have better than average teeth. A family tendency for gastro-intestinal disturbances such as diarrhea and intolerance to fat was reported recently by Boyer and Andersen (16).

The geographic distribution now appears to be associated largely with the use of wheat or rye as a staple article of food, but genetic or other factors may play a role also. Most of the cases have been observed in England and America; next in order comes Germany and Austria, while others have been recorded in Scandinavia, Switzerland, and the Netherlands. In France, the condition is rare, and only a few cases have been reported from Italy (8). Ebbs and his associates (17) believed that the geographic distribution of celiac disease might coincide with the distribution of goiter. Reports from various European countries, notably Great Britain, Norway, and Sweden, seemed to indicate that celiac disease thrived during wartime (8, 13, 18, 19). However, van de Kamer, Weijers, and Dicke (1), noted that cases of celiac disease in the Netherlands were fewer or improved during the years of World War II when wheat and rye were in short supply and consequently more potatoes were eaten.

Theories of Etiology and Treatments

Many different theories as to the etiology of celiac disease have been proposed. Treatment from the beginning has been by diet and has varied somewhat depending on the physician's idea as to etiology.

Although Gee mentioned possible errors in diet as a cause of celiac disease, he considered the condition to be due to failure of digestion of unknown origin and emphasized diet as the only cure. In 1888, he wrote: "If the patient can be cured at all it must be by means of diet." Seventy years later, these two ideas are still valid: the nature of the digestive failure remains obscure and diet is still the only effective means of treatment. Gee believed that of all food, cow's milk was the least suitable because of its hard curd, but he limited starchy foods also. He wrote: "The allowance of farinaceous food must be small; highly starchy food, rice, sago, cornflour are unfit."

Gibbons (20) emphasized the importance of diet, similar to that of Gee, as the only effective treatment.

Cheadle (4) believed the disease was caused by a cessation of bile secretion and accordingly he renamed the disease "acholia." In his treatment, he attempted to ease the work of the liver.

The next contribution of importance was the appearance in America of Herter's (21) monograph, "Infantilism from Chronic Intestinal Infection." He appears genuinely to have rediscovered the disease and to have been unaware of the writings of Gee, Cheadle, and others. Herter first recognized infantilism as a symptom of the disease, and he believed that this was due to an insufficiency of the foodstuffs absorbed from the digestive tract. This poor absorption he believed to be caused by the presence and dominance of an unsuitable bacterial flora in the intestines of celiac patients. He found a high-protein diet beneficial and attributed this to the effect of the protein on the intestinal flora. He believed that fats were, on the whole, better tolerated than carbohydrates.

Heubner (9) made the first important German

contribution. He challenged Herter's theory that bacterial infection was the primary cause of the condition. He thought that celiac disease might be the result of some organic weakness, as he frequently observed neuropathy in the parents. The treatment advocated by Heubner differed from Herter's in that Heubner assigned milk protein a subordinate role, but he emphasized the importance of a high-protein, low-carbohydrate, and low-fat diet, as did Herter. Fanconi (14) believed that failure of function of the small intestine was the primary cause of celiac disease.

The celiac disorder has been given various names, some of which reflect the varied ideas as to etiology. In continental Europe, the condition has been frequently called the Heubner-Herter disease (22). Heubner (9) himself referred to it as "schwere Verdauungsinsuffizienz." Elsewhere, it has been described under various headings: thus, Gee referred to "coeliac affection" (3); Cheadle to "acholia" (4); Herter to "intestinal infantilism" (21); Bramwell to "pancreatic infantilism" (23); Brown *et al.* to "chronic intestinal indigestion" (24); and Parsons to "Gee's disease" (8). More recently, the terms "carbohydrate intolerance" (25); "celiac syndrome" (26) which clearly includes other disorders; and "gluten-induced celiac disease" (27) which indicates that celiac disease may not be a single disease entity, have been used with increasing frequency.

Other Diets Used in Treating Celiac Disease

While Gee, Herter, and Heubner all called attention to the importance of diets rich in protein in the treatment of celiac disease, it remained for Howland (28) to demonstrate clinically the vast difference between a diet rather rich in protein and one in which protein was the chief nutrient. He wrote: "From clinical experience it has been found that of all the elements of the food carbohydrate is the one which must be excluded rigorously; that with this greatly reduced the other elements are almost always well digested, even though the absorption of fat may not be so satisfactory as in health." In the first stage of his three-stage dietary, Howland allowed protein milk only. In the second stage, protein milk was the basis, but other foods, such as curds, scraped meat, egg white, and eventually whole egg, were included, and orange and tomato juice were given. In the third stage, other carbohydrate-containing foods were added, low-carbohydrate vegetables first, with bread, cereals, and potatoes last of all. Howland wrote: "Half-way measures are quite unavailing and cause only loss of time, which is a serious matter for the time required for a cure is years."

The introduction of Howland's three-phase dietary, in which calories came largely from protein, marked a turning point in the treatment of celiac disease. It was, however, Haas' (29) discovery in 1924 that carbohydrates in the form of ripe bananas were tolerated perfectly and would bring about a clinical cure in practically all cases which altered the prognosis of celiac disease and aided physicians everywhere in treating this condition.

The importance of an adequate diet for celiac patients was emphasized by Nelson (30) in 1930 and Parsons (22) in 1931. Nelson claimed that the restricted dietary regimen formerly followed over long periods resulted in stunted growth, dental caries, rickets, scurvy, and anemia. Andersen (31) believed that celiac disease, when fully developed, was an expression of a multiple deficiency state superimposed on a constitutional defect. She advocated a diet high in calories, protein, and vitamins. Foods containing sugars were included, but cereal starches, bread, and potatoes were withheld for a year or more after recovery from severe symptoms and were then introduced cautiously.

In 1942, May *et al.* (32) reported marked improvement in patients following parenteral administration of crude liver extract and B-complex. Supplements of vitamins A and D and ascorbic acid were given orally. In the light of present knowledge, the authors' statement that "in most cases we have given a normal diet for the age of the patient from the very outset of treatment" appears puzzling. One case described, however, had been under dietary treatment for at least eight months before parenteral treatment with liver extract and B-complex was begun. The authors commented also: "When special studies are not being undertaken, it would seem desirable to offer a diet composed of the simple foods well tolerated by patients with celiac disease (skim milk, bananas, curds and scraped beef). The diet may be liberalized according to the improvement of the patient."

In commenting on the report of May *et al.*, Andersen (31) said that in her experience the treatment with B-complex neither restored complete tolerance to a normal diet, nor terminated all the phenomena of the critical period. Presumably this is in line with May's later experience, also, since in 1951 Lowe and May (26) reported remarkable improvement in patients when cereal (a commercial preparation containing wheat, oats, and cornstarch) was removed from the diet. These patients had previously been given crude liver extract, B-complex, and folic acid parenterally. The authors commented that they were not sure whether celiac disease and this "carbohydrate intolerance" were the same or related conditions.

In any event, the experience of various investigators led to replacement of the restricted diet for celiac disease by a more liberal dietary regimen which resulted in greater growth and better nutri-

tive condition in the celiac patients. After preparations of synthetic vitamins had become available, it became common practice to supplement the celiac diet with various vitamins in purified form (33). Folic acid therapy did not prove to be of value in the treatment of celiac disease (34, 35).

Fanconi (14) emphasized the avoidance of fats in the early stages of treatment and advocated a diet consisting mostly of fruits and vegetables. In 1951, Wyllie, Payne, and Beynon (11) described the successful dietary treatment of twenty-five celiac children using a modification of Fanconi's fruit and vegetable diet. This diet was arranged in four stages. The whole of the dietary contained a high amount of protein with moderate fat. The important feature, however, was the choice of carbohydrates, which in the first three stages were selected from the non-starch-containing foods.

By far the most important contribution to the history of this disease came first in 1950 when two Dutch students, Dicke and Weijers, presented theses to substantiate the observation that wheat flour in the diet of patients with celiac disease aggravates the condition remarkably. Then, in 1953, Dicke, Weijers, and van de Kamer (1) reported that wheat and rye were responsible for the diarrhea and steatorrhea of celiac disease. They found that when children with celiac disease were placed on diets free of wheat and rye cereals, fat excretion in the stools decreased notably. In a later paper that year, they showed that the gluten of these cereals, particularly the gliadin fraction, was responsible for the return of excessive fat excretion but that wheat starch did not have this effect. In one patient, oatmeal was also found to increase fat excretion. Corn and rice cereals were well tolerated (36).

In 1955, van de Kamer and Weijers (37) postulated that it may be the quantity of protein-bound glutamine in any given protein that is responsible for the symptoms of celiac disease. They found this to be high in proteins of wheat, rye, barley, and oats, but low in rice, corn, and buckwheat. Low ratios of protein-bound glutamine were also found in beef, cod, milk, egg, potato, and some legumes, all of which are inoffensive. Recently, these same authors (38) have investigated the rise of the glutamine level in the blood of patients with celiac disease after oral loading with gliadin. They found that this rise was primarily due to bound glutamine (presumably peptides) rather than the free form. In this article, the authors again emphasized that they are discussing an hypothesis but that these experiments lend further support to it.

In 1956, Fryer (39), in a review of some recent advances in clinical nutrition, made this pertinent comment: "Incidentally, we may learn something from observing that celiac disease was thought by many to be due directly to an intolerance to dietary fat because fat absorption was impaired. Others had noted empirical improvement on diets free from bread, and thought that the offending nutrient was carbohydrate. The controversy is ended, apparently, by the discovery that the cause is neither fat nor carbohydrate, but sensitivity to a specific protein."

Practical suggestions for a diet free from cereal proteins, except for those found in corn and rice, are given by Sleisinger *et al.* (40) under the designation of a wheat-, rye-, and oat-free diet. They used this diet for non-tropical sprue. Improvement of patients with celiac disease on such a diet is usually marked in a few days, but treatment must be prolonged before a complete cure is effected.

Summary

The literature on the etiology and treatment of celiac disease has been reviewed from the first clear description of the disease by Gee in 1888 to the present day.

From the beginning, the only successful treatment for celiac disease has been diet, but the particular form of dieting has varied. Gee himself believed that milk was the least suitable food and that the allowance of farinaceous food should be small. Herter and Heubner found a high-protein, low-carbohydrate, and low-fat diet beneficial. The introduction of Howland's three-phase dietary, which was almost exclusively protein and which withheld starchy foods, including cereals, marked a turning point in the treatment of celiac disease.

Haas' discovery in 1924 that carbohydrates in the form of ripe bananas were tolerated perfectly aided physicians everywhere in treating this condition. Fanconi advocated a diet consisting mostly of fruit and vegetables, and a modification of this diet was used successfully by Wyllie *et al.* The importance of an adequate diet for children with celiac disease was first emphasized by Nelson in 1930 and Parsons in 1931. Since that time, the restricted diet has been replaced by a more liberal dietary regimen which has resulted in greater growth and better nutritive condition in the celiac patients.

The immediate results of the "gluten-free" diet for the treatment of celiac disease are unquestionably the best yet attained, but at least a generation will be required to ascertain whether recurrences of symptoms are noted when wheat, rye, oats, and barley are re-introduced into the diet.

References

(1) Dicke, W. K., Weijers, H. A., and van de Kamer, J. H.: Coeliac disease. 2. The presence in wheat of a factor having a deleterious effect in cases of coeliac disease. Acta Paediat. 42: 34, 1953.

(2) Alvey, C., Anderson, C. M., and Freeman, M.: Wheat gluten and coeliac disease. Arch. Dis. Childhood 32: 434, 1957.

(3) Gee, S.: On the coeliac affection. St. Barth.

Hosp. Rept. 24: 17, 1888. *Cited in* Am. J. Dis. Child. 48: 159, 1934.

(4) CHEADLE, W. B.: A clinical lecture on acholia. Lancet 81: 1497, 1903.

(5) ANDERSEN, D. H., AND MIKE, E. M.: Diet therapy in the celiac syndrome. J. Am. Dietet. A. 31: 340, 1955.

(6) MILLER, R.: The non-diarrhoeic type of coeliac disease: A form of chronic fat indigestion in children. Lancet 204: 72, 1923.

(7) MILLER, R.: Coeliac disease: Its definition and diagnosis. Lancet 210: 330, 1926.

(8) PARSONS, L. G.: Celiac disease. Am. J. Dis. Child. 43: 1293, 1932.

(9) VON HEUBNER, O.: Uber schwere Verdauungsinsuffizienz beim Kinde jenseits des Säuglingsalters. Jahrb. Kinderh. 70: 667, 1909.

(10) HOLT, L. E., JR., AND MCINTOSH, R.: Holt's Diseases of Infancy and Childhood: A Textbook for the Use of Students and Practitioners. 11th ed. N.Y.: D. Appleton-Century Co., 1940.

(11) WYLLIE, W. G., PAYNE, W. W., AND BEYNON, D. W.: A dietetic approach to the coeliac affection. Arch. Dis. Childhood 26: 4, 1951.

(12) JEANS, P. C., AND MARRIOTT, W. M.: Infant Nutrition: A Textbook of Infant Feeding for Students and Practitioners of Medicine. 4th ed. St. Louis: C. V. Mosby Co., 1947.

(13) KARLEN, K. H.: On coeliac disease and the frequency of this malady in Sweden in recent time. Sven. Lakart. 45/29: 1399, 1948. *Abstract in* Excerp. Med., Section VII, Pediatrics 3: 46, 1949.

(14) FANCONI: Zöliakie (coeliac disease). Deutsche med. Wchnschr. 64: 1607, 1938.

(15) BROWN, A.: Some etiological factors in the coeliac syndrome. Arch. Dis. Childhood 24: 99, 1949.

(16) BOYER, P. H., AND ANDERSEN, D. H.: A genetic study of celiac disease; incidence of celiac disease, gastrointestinal disorders, and diabetes in pedigrees of children with celiac disease. Am. J. Dis. Child. 91: 131, 1956.

(17) EBBS, J. H., THOMPSON, M., AND STEIN, W. O.: Etiologic factors in celiac disease. Am. J. Dis. Child. 79: 936, 1950.

(18) PATERSON, D., PIERCE, M., AND PECK, E.: The treatment of coeliac disease with vitamin B complex and concentrated liver. Arch, Dis. Childhood 19: 99, 1944.

(19) ODEGARD, A.: Resorption research on celiac disease. Acta Paediat. 1: 235, 1948, Suppl. No. 35.

(20) GIBBONS, R. A.: The coeliac affection in children. Edinburgh M. J. 35: 321, 1889; 35: 420, 1889.

(21) HERTER, C. A.: On Infantilism from Chronic Intestinal Infection, Characterized by the Overgrowth and Persistence of Flora of the Nursling Period; a Study of the Clinical Course, Bacteriology, Chemistry and Therapeutics of Arrested Development in Infancy. N.Y.: Macmillan Co., 1908.

(22) PARSONS, L. G.: Coeliac disease. Lancet 220: 61, 1931.

(23) BRAMWELL, B.: Clinical studies. 3. Pancreatic infantilism. Edinburgh M. J. 14: 323, 1915.

(24) BROWN, A., COURTNEY, A. M., DAVIS, G. A., AND MACLACHLAN, I. F.: Etiology of chronic intestinal indigestion. Chemical and bacteriologic investigation. Am. J. Dis. Child. 30: 603, 1925.

(25) LOWE, C. U., AND MAY, C. D.: Metabolic studies in patients with intolerance to complex carbohydrates. Am. J. Dis. Child. 81: 81, 1951.

(26) ANDERSEN, D. H.: Cystic fibrosis of the pancreas and its relation to celiac disease. A clinical and pathologic study. Am. J. Dis. Child. 56: 344, 1938.

(27) HOLT, L. E., JR.: Celiac disease—what is it? J. Pediat. 46: 369, 1955.

(28) HOWLAND, J.: Prolonged intolerance to carbohydrates. Trans. Am. Pediat. Soc. 33: 11, 1921.

(29) HAAS, S. V.: The value of the banana in the treatment of celiac disease. Am. J. Dis. Child. 28: 421, 1924.

(30) NELSON, M. V. K.: Celiac disease. A report of metabolic observations on four cases. Am. J. Dis. Child. 39: 76, 1930.

(31) ANDERSEN, D. H.: Celiac syndrome. 6. The relationship of celiac disease, starch intolerance and steatorrhea. J. Pediat. 30: 564, 1947.

(32) MAY, C. D., MCCREARY, J. F., AND BLACKFAN, K. D.: Notes concerning the cause and treatment of celiac disease. J. Pediat. 21: 289, 1942.

(33) BOGERT, L. J.: Dietary Uses of the Banana in Health and Disease: A Review of Scientific Literature. Rev. ed. N.Y.: United Fruit Co., 1942.

(34) THOMSON, M. L., DALTON, H. W., AND WILSON V. K.: Megaloblastic anaemia in coeliac disease treated with folic acid. Lancet 257: 238, 1949.

(35) HAY, J. D.: Folic acid in coeliac disease: A study of its administration in twenty-two cases. Arch. Dis. Childhood 23: 220, 1948.

(36) VAN DE KAMER, J. H., WEIJERS, H. A., AND DICKE, W. K.: Coeliac disease. 4. An investigation into the injurious constituents of wheat in connection with their action on patients with coeliac disease. Acta Paediat. 42: 223, 1953.

(37) VAN DE KAMER, J. H., AND WEIJERS, H. A.: Coeliac disease. 5. Some experiments on the cause of the harmful effect of wheat gliadin (preliminary communication). Acta Paediat 44: 465, 1955.

(38) WEIJERS, H. A., AND VAN DE KAMER, J. H.: Coeliac disease. 7. Application and interpretation of the gliadine tolerance curve. Acta Paediat. 48: 17, 1959.

(39) FRYER, J. H.: Some recent advances in clinical nutrition. J. Am. Dietet. A. 32: 97, 1956.

(40) SLEISENGER, M. H., RYNBERGEN, H. J., PERT, J. H., AND ALMY, T. P.: A wheat-, rye-, and oat-free diet. Treatment for non-tropical sprue. J. Am. Dietet. A. 33: 1137, 1957.

Health levels in the Western world are at an all-time high, Health Information Foundation reports. Average life expectancy in the U.S., England, France, and Sweden, for example, is about seventy years—an increase of twenty years since 1901. In 1900, the average mortality rate for these countries was 17 per 1000 population; by 1958, it had dropped to just over 7 per 1000. In the last three decades, tuberculosis mortality alone has declined more than 90 per cent in the U.S., England, and Sweden.

Sodium and Potassium in Salt-Water Fish[1]

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ALTHOUGH NUTRITIONISTS have long believed that there is no difference in the mineral composition of fresh- and salt-water fish (1,2), until recently no conclusive work has been done to confirm this theory. A recently published analysis of sodium and potassium content of salt-water fish indicated that these fish are acceptable in sodium content for inclusion in moderately restricted sodium diets (3). Although all salt-water fish analyzed had a sodium range which would permit their use in these diets, there was great variation in sodium content of similar fish from various geographic regions (3). No data are available for salt-water fish from the Gulf Coast area. Since fish is a major food in the diets of people from this region (4,5), analyses of Gulf Coast salt-water fish for sodium and potassium appeared justified.

Method of Study

Nine common species of Gulf Coast salt-water fish were used. Six whole fish of each species were obtained, and one sample of each fish was taken for analysis. The analytical procedure for sodium and potassium analysis of the Metabolic Laboratories, Veterans Administration Hospital, Houston, was used—a procedure similar to that of Thurston (3).

Results and Discussion

The sodium content of nine species of Gulf Coast salt-water fish is given in Table 1. The values ranged from 46.8 to 101.2 mg. per 100 gm. fish. Only one species, sheepshead, has a sodium content greater than 100 mg. per 100 gm. fish. The average value for the group was 66.1 mg. per 100-gm. portion.

Although the ratio of sodium to potassium varied considerably, the average was one part by weight of sodium to four parts by weight of potassium.

The sodium content of the fish analyzed is similar to that of salt-water fish from other geographic regions and is in a range that will permit their use in sodium-restricted diets.

Summary

Since the sodium content of similar fish of various geographic areas has been found to vary considerably and no data being available for Gulf Coast salt-water fish, the sodium content of Gulf Coast salt-water fish was analyzed to learn whether such fish might be used in sodium-restricted diets.

The sodium content of nine species of Gulf Coast salt-water fish range from 46.8 to 101.2 mg. per 100 gm. fish. Thus, the sodium content of these fish is

TABLE 1 **Sodium and potassium content of nine species of Gulf Coast salt-water fish**

COMMON NAME OF FISH	SCIENTIFIC NAME	SODIUM	POTASSIUM
		mg./100 gm.	*mg./100 gm.*
Salt-water trout	*Cynoscion arenarius*	54.2	218.4
Red fish	*Sciaenops ocellata*	54.9	273.0
Gulf King-Whiting	*Menticirrhus littoralis*	82.8	249.6
Red snapper	*Lutjanus aya*	64.9	323.0
Drum	*Pogonias cromis*	50.6	226.2
Flounder	*Paralichthys lethostigma*	53.9	220.4
Pompano	*Trachinotus carolinus*	46.8	191.1
Croaker	*Micropogon undulatus*	87.4	234.0
Sheepshead	*Archosargus probatocephalus*	101.2	234.0

comparable to that of salt-water fish from other geographic regions and such fish are suitable for use in sodium-restricted diets.

References

(1) BILLS, C. E., MCDONALD, F. G., NIEDERMEIER, W., AND SCHWARTZ, M. C.: Sodium and potassium in foods and waters. Determination by the flame photometer. J. Am. Dietet. A. 25: 304, 1949.

(2) MCLESTER, J. S., AND DARBY, W. J.: Nutrition and Diet in Health and Disease. 6th ed. Philadelphia: W. B. Saunders Co., 1952.

(3) THURSTON, C. E.: Sodium and potassium content of 34 species of fish. J. Am. Dietet. A: 34: 396, 1958.

(4) Consumption of Food in the United States, 1909-52. USDA Agric. Handbook No. 62, Sept. 1953, Table 8.

(5) ROUNSEFELL, G. A.: Biology of the Commercial Fishes of the Gulf of Mexico. Gulf of Mexico —Its Origin, Waters, and Marine Life. Fish and Wildlife Svc. Fishery Bull. No. 89, 1954, p. 507.

Foliar Nutrition for Plants

The functions of leaves have been known for many years. Leaves utilizing the energy of the sun, carbon dioxide of the atmosphere, and the raw materials from the roots, manufacture the food products needed for plant growth. The concept that a leaf is an appendage concerned primarily with food manufacture has persisted almost to the present day, despite numerous reports that above-ground plant parts can also absorb water and nutrients and thus play a more active role in plant nutrition. Many biologists believe that leaves are covered with an impermeable cuticle which will not permit the penetration of sprayed-on mineral nutrients. However, the use of radioactive isotopes has enabled the plant nutritionist to establish without doubt that nutrients sprayed on foliage can be absorbed to various degrees. Furthermore, the isotope technique has allowed us to determine the mineral nutrient contribution in the plant that will come from the sprayed-on fertilizer, the atmospheric conditions most conducive to foliar absorption, the physical and chemical properties of the nutrient medium that will increase the rate of absorption, the plant parts that absorb the sprayed nutrient solution at higher rates, and the pathways of transporting the absorbed chemical throughout the plant.

These facts have been realized in a practical way by the development of the nutrient spray industry. Variously called "foliar feeding," "non-root feeding," and "foliar nutrition," this practice has become an economical method of applying nutrients at critical times in plant development. The following are just a few examples. In California and Florida, fruit trees are sprayed annually with many trace elements, i.e., zinc, iron, copper, boron, and manganese. Many fruit trees throughout the country are sprayed regularly with urea nitrogen. Thousands of acres of celery in Michigan, New York, and Florida are now being sprayed with calcium and magnesium to correct certain plant disorders which are not easily corrected by soil applications. Millions of gallons of liquids and thousands of tons of soluble dry fertilizer are, in fact, being applied annually to the foliage of crops.

To our knowledge, no foliage application of any nutrient is being made to plants to correct for nutrient deficiencies in human beings who will eventually consume the whole or part of the sprayed plant. No doubt, the human consumption of a needed nutrient would be more efficient if made directly rather than using plant tissue as a medium.

It follows that if plants absorb nutrients through their aerial parts, perhaps the reverse of this process may also occur; that is, the loss of nutrients from the aerial parts by leaching by water, such as rain. Use of radioactive isotopes as tracers has greatly aided in the study of such losses.

Thus the leaf has been found to assume an even more dynamic role as an organ actively engaged in nutrient absorption and loss, helping to adjust a plant to its environment by maintaining a nutritional balance conducive to optimum growth.—*Porter B. Lombard, Ph.D., Citrus Experiment Station, University of California, Riverside, speaking before the 42nd Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1959.*

Sodium and Potassium in Puerto Rican Foods and Waters[1]

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SINCE THE beginning of the last century when Sir Humphrey Davy discovered the element sodium, the chemical and medical sciences have recognized the importance of sodium as an ingredient in the structure of the human body and as an essential element in the human diet.

O'Shaughnesy, a British physician, was the first, in 1830, to pay attention to the importance of salt in various pathologic conditions. However, the deleterious effects of excessive salt intake have been known for many generations, as the Chinese used the ingestion of a cupful of salt as a means of suicide (1).

The more extensive use of low-sodium diets has increased considerably in recent years, due to a better knowledge of the sodium content of foods, as well as to the modern methods used to determine the concentration of sodium in blood and urine. Low-sodium diets are frequently used in treating patients with cardiovascular, renal, and hepatic disease, as well as in complications of pregnancy.

[1]Received for publication April 8, 1959.

[2]The authors wish to acknowledge the cooperation of the Dietetic Staff of San Patricio Veterans Administration Hospital for furnishing food samples; Dr. Guillermo Arbona for allowing us to obtain the water samples through the Department of Health; Charles M. Romney, Bureau of Environmental Sanitation, Department of Health, for his cooperation in the distribution of test tubes for the collection of water samples from all municipalities of Puerto Rico; the Health Unit sample collectors for collecting and sending us the water samples for analyses; Hernandez-Vega, Puerto Rico Water Resources Authority, for furnishing information necessary for the interpretation of the results; Luis Berrios-Ortiz, Assistant Professor, Home Economics Department, University of Puerto Rico, for his cooperation in verifying scientific names and translation of common names of foods from Spanish to English; and Dr. Jose Chaves-Estrada and Dr. R. Rodriguez-Molina, for their encouragement during this study.

In Puerto Rico, the preparation of a low-sodium diet is difficult and lacks exactness because tables of food composition prepared in the continental United States do not include native foods. We have, therefore, carried out a survey of the sodium and potassium on about 180 native and other foods frequently consumed in Puerto Rico, as well as of the drinking water of all 77 municipalities of the island.

Material and Methods

The flame photometric method as described by *Clifford et al.* (2) was used in determining sodium and potassium values. In preparation for the determination in the flame photometer, samples were weighed, dried, and ashed. The ashes were dissolved volumetrically, interfering substances were removed, and a clear filtrate was obtained. The final readings were made in a galvanometer which registered an impulse, depending on the concentration of sodium or potassium in the solution. Standard solutions were used in the calibration of the method. All glassware was acid-washed and rinsed with double distilled water.

In determining the foods to be analyzed, preference was given to native foods in their natural, uncooked state. Each sample was analyzed in duplicate. Some foods were analyzed up to twenty times.

For the survey of the sodium and potassium in drinking waters from the various municipalities on the island, test tubes with screw caps which were prepared to remove all traces of sodium were distributed by arrangement with the Bureau of Environmental Sanitation of the Puerto Rico Health Department, to all health units with instructions on how to collect representative samples.

Recovery experiments were carried out to evaluate the method. Solutions with a known amount of sodium and potassium were run through the entire

TABLE 1 **Sodium and potassium of Puerto Rican foods***

FOOD			NUMBER OF DETERMINATIONS	SODIUM			POTASSIUM		
English name	Spanish name	Scientific name (3, 4)		Minimum	Maximum	Average	Minimum	Maximum	Average
				mg./100 gm.			*mg./100 gm.*		
Annato	achiote	*Bixa orellana L.*	4	50	57	54	1173	1596	1149
Avocado	aguacate	*Persea Persea L.*	5	6	24	15	224	475	319
Banana	guineo								
Apple	manzano (maduro)	*Musa sapientum L.*	2	3	11	7	179	229	204
Baracoa (green)	colorado (verde)	*Musa sapientum rubra*	2	6	6	6	381	384	382
Gross-Michel	gigante	*Musa sapientum L.*							
Green	verde		4	5	10	7	177	374	275
Ripe	maduro		4	2	9	5	286	375	329
From Santo Domingo	Dominicano		2	6	7	7	420	433	427
Horse plantain	mafafo (verde)	*Musa sapientum L.*	2	9	13	11	309	413	361
Ladyfinger	niño	*Musa sapientum champa*							
Green	verde		2	6	10	8	418	434	426
Ripe	maduro		2	11	21	16	286	299	293
Beans	habichuelas	*Phaseolus vulgaris*							
Kidney									
Black	negras		2	18	41	29	1357	1380	1369
Pink	rosita								
Canned	enlatadas		2	195	314	255	278	363	320
Dried	secas		10	18	58	38	688	1036	863
Native	del país		2	16	16	16	389	389	389
Red	coloradas								
Dried	secas		1	—	—	12	—	—	892
Fresh grains	frescas		4	17	25	20	460	680	574
White	blancas								
Dried	secas		6	26	29	27	897	1030	1014
Fresh	frescas		2	89	133	111	467	653	560
Native	del país		6	23	46	32	653	1329	1200
Lima	habas	*Phaseolus lunatus*	2	26	43	35	1851	2053	1952
Snap	tiernas	*Phaseolus vulgaris*	6	9	26	16	135	316	214
Soy	soya	*Soja Max piper*							
Canned	enlatadas		2	294	296	295	372	390	381
Dried	secas		2	20	23	21	714	838	776
Beef broth	caldo de res								
With salt	con sal		4	48	50	49	9	24	14
Without salt	sin sal		4	20	28	26	22	36	51
Beet greens	remolacha, hojas	*Beta vulgaris*	1	—	—	228	—	—	346
Bread	pan								
White, enriched	especial, enriquecido		3	543	644	580	109	115	112
Low-sodium	especial sin sal		3	65	132	107	106	129	115
Breadfruit	panapén	*Artecarpus communis*	6	12	20	16	336	523	401
Bread nut	pana de pepita	*Artocarpus communis*	6	14	28	18	205	586	429
Brussel sprouts (frozen)	coles de Bruselas (congeladas)	*Brassica eloracea gommifora*	2	28	28	28	397	437	417
Cabbage	repollo	*Brassica eloracea capitata*	7	11	36	20	211	316	267
Chinese	chino	*Brassica pekinensis*	2	73	105	89	287	367	327
Carrot	zanahoria	*Daucus carota*							
Canned	enlatada		1	—	—	184	—	—	159
Raw	cruda		6	61	102	72	139	532	331
Cassabanana	pepino angolo	*Sicania odorifera*	6	6	16	11	410	661	527
Cassava	yuca	*Manihot Manihot*	4	7	37	19	144	399	260
Cazabe	casabe		2	36	41	39	142	146	144
Chard	acelga	*Beta vulgaris* var. *crassa*	5	204	306	255	88	392	221
"Chayote"	chayote	*Sechium edule*	12	3	15	8	48	139	118
"Chironja"	chironja		2	11	13	12	172	192	182
Cocoa (instant)	cocoa al instante	*Theodroma Cacao L.*	2	83	121	102	277	313	295
Coconut (ripe)	coco (seco)	*Cocos nucifera*							
Meat	pulpa		4	20	38	27	72	141	218
Milk	agua		2	9	13	11	16	25	21
Preserve	dulce de		2	39	52	45	131	144	138
Preserve with pineapple	dulce de, con piña		2	7	7	7	31	31	31
Coconut (tender)	coco (tierno)								
Meat	pulpa		4	14	30	24	163	278	240
Milk	agua		4	3	6	4	195	211	204
Coffee ("Rico")	café ("Rico")	*Coffea arabiga*	2	31	33	32	1130	1402	1266
Coffee senna	hedionda	*Ditremeza occidentalis*	2	37	42	39	895	971	933
Collard greens	Berza, hojas	*Brassica eloracea acephala*	2	91	107	99	422	482	452
"Condimix"	"Condimix"		4	2357	2422	2389	280	297	289
Coriander	culantro	*Coriandrum sativum*	7	44	70	61	277	567	446
Corn	maíz	*Zea mays*	2	16	37	27	173	290	236
Cornstarch	maicena		2	8	18	13	20	24	22
Crackers, soda, salted	galletas saladas		1	—	—	361	—	—	97
Cucumber	pepinillo	*Cucumis sativus*	5	6	11	6	116	143	129
Cumin seed	comino	*Cuminum cyminum*	2	147	150	148	1368	1657	1513
Custard apple	corazón	*Annona reticulata*	2	49	52	50	324	358	341
Dasheen or taro	malanga	*Caladium colocasia*	3	11	24	18	179	556	428
Egg, whole	huevo, entero		4	83	137	101	138	145	141
Yolk	yema		2	57	71	64	166	172	169
White	clara		2	71	98	84	125	184	155
Eggplant	berenjena	*Solanum melongena esculentum*	11	9	21	14	42	297	168
Endive	escarola	*Cichorium endivia*	2	124	143	134	280	296	288
Fennel	hinojo, hojas	*Foeniculum Foeniculum*	1	—	—	331	—	—	784

*Analyses made on edible portions of unprocessed foods, except as otherwise designated. Native and other foods of frequent consumption in Puerto Rico are included.

TABLE 1—continued

FOOD			NUMBER OF DETERMINATIONS	SODIUM			POTASSIUM		
English name	Spanish name	Scientific name (3, 4)		Minimum	Maximum	Average	Minimum	Maximum	Average
				mg./100 gm.			*mg./100 gm.*		
Flour, enriched	harina enriquecida								
Bread	de pan		2	13	22	18	78	100	89
Cake	de bizcocho		2	9	17	13	76	77	77
Rice	de arroz		2	73	79	76	108	123	115
Garlic	ajo	*Allium sativum*	4	13	53	32	399	617	515
Gelatin (Jello)	gelatina								
Reconstituted, unflavored	preparada, sin sabor		2	37	39	38	5	10	8
Powdered	sin preparar		2	247	308	278	0	0	0
Genip	quenepa	*Melicocca bijuga*	2	33	35	34	114	125	120
Genipop	jagua	*Genipa americana*	4	11	39	25	197	381	286
Ginger	jengibre	*Zingi'er Zingiber*	5	24	43	35	86	362	180
Golden apple (ambarella)	jobo de la India (cítara)	*Spondias dulcis*	4	6	43	21	137	223	176
Grapefruit	toronja	*Citrus maxima*							
Juice, fresh	jugo, fresco		6	10	29	17	66	140	109
Sections	gajos		8	4	18	7	122	232	160
Guava, fruit	guayaba, fruta	*Psidium Guajava*	8	7	52	22	189	520	286
Nectar	néctar		2	3	16	10	39	42	41
Paste	pasta		5	12	52	41	64	104	68
Sirup	"sirop"		4	26	47	37	77	89	81
Herring, smoked	arenque ahumado	*Clupea harengus*	2	6013	6449	6231	151	163	157
Lentils	lentejas	*Ervum Lens*	2	35	47	41	716	821	769
Lettuce	lechuga	*Lactuca sativa*							
Head	Americana		2	30	32	31	111	120	116
Leaf	del país		6	43	84	57	208	402	295
Lemon	limón	*Citrus limonia*							
Juice, fresh	jugo, fresco		4	3	13	8	27	45	33
Sections	gajos		4	3	14	11	80	104	91
Lime	lima	*Citrus aurantifolia*							
Juice, fresh	jugo, fresco		2	15	20	18	48	73	61
Sections	gajos		4	4	20	10	73	165	80
"Mamey"	mamey	*Mammea americana L.*	2	13	17	15	44	50	47
Mango	mangó	*Mangifera indica*	11	3	25	14	64	279	148
Large or "pazote"	largo, pazote		2	10	13	12	247	279	263
"Mayaguez" variety	mayagüezano		2	2	6	4	136	153	144
Nectar	néctar		2	5	13	9	45	45	45
Marjoram	orégano brujo	*Coleus amboinicus*	2	13	16	15	93	125	109
Spanish	de España		2	45	59	52	401	563	482
Mayonnaise	mayonesa		1	—	—	322	—	—	40
Milk, fresh	leche, fresca		2	51	53	52	134	142	138
Cream	crema		1	—	—	47	—	—	88
Evaporated	evaporada		1	—	—	88	—	—	264
Skim, dried	sin grasa, en polvo		2	385	446	415	1105	1108	1107
Molasses	melao		2	36	47	41	178	184	181
Naked wood, bark	mabí, cáscara	*Colubrina reclinata*	8	28	77	53	449	1679	1042
Oats	avena	*Avena sativa*	2	13	16	15	272	295	283
Oil	aceite								
Soybean	soya	*Soja Max Piper*	1	—	—	15	—	—	16
Vegetable	vegetal		3	11	43	29	29	48	40
Onion	cebolla	*Allium cepa*	7	6	23	14	10	175	84
Okra	quingombó	*Hi iscus esculentus*	20	19	34	25	78	262	178
Orange	naranja dulce (china)	*Citrus sinensis*							
Juice, fresh	jugo, fresco		6	11	34	19	83	118	102
Juice, concentrated	jugo, concentrado								
Birdseye	Birdseye		1	—	—	21	—	—	411
Monarch	Monarch		1	—	—	14	—	—	119
Sections	gajos		7	1	8	4	56	207	146
Orange, sour	naranja agria	*Citrus aurantium*							
Juice, fresh	jugo, fresco		4	17	21	20	140	153	147
Paste	pasta		3	14	31	20	5	44	18
Rind	corteoza		6	15	46	28	109	274	175
Sections	gajos		2	11	12	11	121	140	130
Papaya	papaya, lechosa	*Carica papaya*							
Green	verde		6	26	53	37	20	129	81
Nectar	néctar		2	5	30	17	46	101	74
Preserve	dulce de		2	9	23	16	95	124	109
Ripe	madura		7	12	28	17	69	187	110
Parsley	perejil	*Apium petroselinum*	4	46	68	59	536	784	685
Peanut, raw	maní, crudo	*Arachis hypogeae*	4	24	40	33	573	586	579
Peas	guisante	*Pisum sativum*	2	26	32	29	953	969	961
Chick	garbanzo	*Cicer arietium*	14	16	60	37	553	1019	787
Cow	frijoles	*Vigna unguiculata*							
Dried	secos		6	26	41	39	681	1035	949
Fresh	frescos		4	31	32	32	502	568	535
Pigeon	gandules	*Cajon Cojon*							
Dried	secos		6	20	36	26	727	1253	1047
Fresh	frescos		22	19	38	28	306	810	472
Pepper	pimiento, verde	*Capsicum frutescens*	7	9	52	23	149	209	197
Bell	morrón		2	10	13	12	109	125	117
Hot	ají picante		4	15	46	27	324	841	521
Sweet, small	ají dulce		10	9	39	22	211	349	303
Black	pimienta negra	*Piper nigrum*	4	37	72	56	1107	1162	1144

TABLE 1—concluded

FOOD			NUMBER OF DETERMINATIONS	SODIUM			POTASSIUM		
English name	Spanish name	Scientific name (2, 3)		Minimum	Maximum	Average	Minimum	Maximum	Average
Pineapple, fresh	piña, fresca	*Ananas Ananas*	4	5	6	6	93	134	116
Canned	enlatada		2	0	10	5	68	74	71
Juice, canned	jugo, enlatado		2	5	8	6	40	157	98
Plantain	plátano	*Musa paradisiaca L.*							
Green	verde		4	9	16	12	257	413	327
Ripe	maduro		10	5	11	9	328	441	398
Pork, salted	tocino		2	535	711	623	34	77	56
Portorican coriander	culantrillo, recao	*Eryngium foetidum*	2	75	89	82	359	429	394
Potato	papa	*Solanum tuberosum*							
With skin	con cáscara		2	11	19	15	76	112	94
Without skin	sin cáscara		8	5	22	10	298	540	405
Puerto Rican yam	batata mameya	*Ipomea Batatas*	5	12	59	31	289	422	347
Pumpkin	calabaza	*Cucurbita pepo*	20	2	27	16	221	618	337
Purslane	verdolaga	*Portulaca oleracea*	4	26	77	49	325	340	338
Radish	rábano	*Raphanus sativus*	6	16	38	26	262	326	286
Rice	arroz	*Oryza sativa*							
White, enriched	blanco, pulido, enriquecido		2	6	11	9	105	107	106
White, native	integral		2	19	23	21	88	90	89
Krispies	Krispies		2	731	732	731	82	96	89
Root celery	apio tuberoso	*Arracacia xanthorrhiza*	7	5	29	9	325	776	411
Rusk, sweet	tostadas dulces		2	279	294	287	24	32	28
Sapodilla	níspero	*Sapota Achras*	2	16	20	18	189	197	193
Sausage	embutidos								
Large	salchichón		2	2619	2647	2633	597	603	600
Native	longaniza		1	—	—	871	—	—	276
Sesame seed, sirup	ajonjolí (sirop)	*Sesamum orientale*	4	17	42	31	39	65	57
Soursop	guanábana	*Annona muricata L.*	4	15	19	18	214	316	268
Spinach	espinaca	*Spinacia oleracea*							
Fresh	fresca		2	40	43	41	613	625	659
Frozen	congelada		2	99	119	109	325	365	314
Star apple	caimito	*Crysophyllum Cainito*	2	17	17	17	15	20	17
Sweet corn root	lerén	*Calathea allovia*	2	12	20	16	582	783	683
Sweet potato, white	batata blanca	*Ipomea Batatas*	12	21	51	29	218	449	264
Paste	pasta		4	22	41	35	41	172	96
Sugar apple	anón	*Annona squamosa*	2	13	20	16	263	294	279
Sugar cane	caña de azucar	*Saccharum officinarum*	2	16	18	17	118	138	128
Juice	guarapo de cana		2	45	49	47	65	67	66
Tamarind	tamarindo	*Tamarindus indica*	4	42	99	61	780	934	834
Nectar	néctar		2	2	3	3	50	53	52
Sirup	sirop		4	31	54	41	12	85	38
Tanier	yautía	*Xanthosoma sagittaefolium*							
Yellow	amarilla		5	10	43	28	324	525	448
White	blanca		17	5	62	28	252	591	437
Tomato	tomate	*Lycopersicon esculentum*							
Juice, canned	jugo, enlatado		1	—	—	70	—	—	81
Native	del país		6	7	19	12	166	198	180
Salad	de ensalada		6	4	7	5	199	235	211
Turnip	nabo	*Brassica rapa*							
Greens	hojas		4	51	105	76	331	445	401
Root	raiz		6	40	93	70	222	393	292
Watercress	berro	*Sisymbrium nasturtium aquaticum*	6	35	63	52	218	411	335
West Indian cherry	acerola	*Malpighia punicifolia L.*	10	11	16	14	46	116	83
Yam	ñame								
Cush-cush	mapuey	*Dioscorea trifida*	1	—	—	11	—	—	493
"Habanero"	habanero	*Dioscorea alata*	4	13	17	15	417	457	437
White, native	blanco	*Dioscorea rotundata*	5	12	26	17	306	476	381

procedure. Recoveries ranging from 88 to 97 per cent were obtained

Results and Discussion

Sodium and potassium values for the foods analyzed are recorded in Table 1. Also included are the common names of the foods in Spanish, the English equivalent, the scientific name, and the number of determinations performed on each food. The results are expressed in terms of milligrams sodium or potassium per 100 gm. food. A wide variation in the sodium content of the foods is indicated. The fruits ranged from very low (orange, banana, lemon, lime, mango, pineapple, grapefruit), containing less than 10 mg. sodium per 100 gm. edible portion; to relatively high (custard apple, genip, tamarind), containing from 30 to 100 mg. per 100 gm. fruit.

Legumes ranged from the low (red kidney beans) to the relatively high (chick pea, cow pea, lentils), containing 30 to 100 mg. per 100 gm. Canned pink beans and soybeans contained more than 200 mg. per 100 gm.

Cereals and their products ranged from a low (polished rice) of 10 mg. per 100 gm. to the relatively high enriched rice flour, which contained 76 mg. per 100 gm.; to the higher ("low-sodium" bread), containing 107 mg. per 100 gm.; and to the still higher (Rice Krispies, enriched white bread, soda crackers), containing more than 200 mg. per 100 gm. Starchy vegetables and their products ranged from a very low figure (potato, plantain, green cooking banana, root celery) of 10 mg. per 100 gm. to the relatively high one (sweet potato paste and cazabe) of 30 to 100 mg. per 100 gm.

TABLE 2 Sodium and potassium of drinking waters in Puerto Rico

TOWN	SODIUM	POTASSIUM	TYPE OF WATER SUPPLY
	mg./100 ml.	*mg./100 ml.*	
Adjuntas	1.1	0.1	filtration plant
Aguada	0.6	0.2	filtration plant
Aguadilla	0.6	0.2	filtration plant
Aguas Buenas	1.3	0.2	filtration plant
Aibonito	4.4	0.2	deep well
Añasco	0.9	0.2	filtration plant
Arecibo	1.6	0.2	filtration plant
Arroyo	1.0	0.1	filtration plant
Barceloneta	9.0	0.3	deep well
Barranquitas	1.0	0.2	filtration plant
Bayamón	1.4	0.2	filtration plant
Cabo Rojo	2.5	0.1	deep well
Caguas	1.3	0.2	filtration plant
Camuy	0.9	0.1	filtration plant
Carolina	1.0	0.3	filtration plant
Cataño	0.8	0.2	filtration plant
Cayey	1.5	0.1	filtration plant
Ceiba	0.8	0.1	filtration plant
Ciales	0.7	0.1	filtration plant
Cidra	2.8	0.3	deep well
Coamo	1.7	0.1	filtration plant
Comerío	2.1	0.1	deep well
Corozal	1.1	0.1	filtration plant
Dorado	1.4	0.2	filtration plant
Fajardo	0.9	0.1	filtration plant
Guánica	10.4	0.2	deep well
Guayama	1.0	0.1	filtration plant
Guayanilla	3.5	0.3	deep well
Guaynabo	1.2	0.2	filtration plant
Gurabo	1.4	0.2	filtration plant
Hatillo	0.8	0.1	filtration plant
Hormigueros	3.1	0.1	deep well
Humacao	1.4	0.2	filtration plant
Isabela	0.6	0.2	filtration plant
Jayuya	1.4	0.2	deep well
Juana Díaz	1.0	0.1	filtration plant
Juncos	2.6	0.1	filtration plant
Lajas	3.2	0.1	filtration plant
Lares	1.0	0.2	filtration plant
Las Marías	6.6	0.3	filtration plant
Las Piedras	1.2	0.2	filtration plant
Loíza	1.1	0.3	filtration plant
Luquillo	0.9	0.1	filtration plant
Manati	1.3	0.1	deep well
Maricao	0.9	0.2	filtration plant
Maunabo	4.7	0.2	deep well
Mayaguez	3.6	0.2	filtration plant
Moca	0.6	0.1	filtration plant
Morovis	1.5	0.2	filtration plant
Naguabo	1.1	0.1	filtration plant
Naranjito	1.4	0.1	filtration plant
Orocovis	0.9	0.1	filtration plant
Patillas	1.9	0.1	deep well
Peñuelas	1.1	0.1	filtration plant
Ponce	1.1	0.2	filtration plant
Quebradillas	0.6	0.2	filtration plant
Rincón	3.8	0.1	deep well
Río Grande	1.0	0.3	filtration plant
Río Piedras	1.0	0.3	filtration plant
Sábana Grande	0.6	0.1	filtration plant
Salinas	3.2	0.1	filtration plant
San Germán	0.5	0.1	filtration plant
San Juan	1.1	0.2	filtration plant
San Lorenzo	1.2	0.1	filtration plant
San Patricio*	1.1	0.1	filtration plant
San Sebastián	1.5	0.2	filtration plant
Santa Isabel	5.6	0.1	deep well
Santurce	1.1	0.2	filtration plant
Toa Alta	0.9	0.2	filtration plant
Toa Baja	1.3	0.2	filtration plant
Trujillo Alto	1.1	0.3	filtration plant
Utuado	1.4	0.2	filtration plant
Vega Alta	1.8	0.1	deep well
Vega Baja	2.7	0.1	filtration plant
Vieques Is.	13.3	0.2	deep well
Villalba	1.1	0.1	filtration plant
Yabucoa	1.7	0.2	filtration plant
Yauco	1.1	0.2	filtration plant

*Location of Veterans Administration Hospital; not a town.

Among the salad vegetables, tomato and cucumber were lowest, with less than 10 mg. sodium per 100 gm., while frozen spinach and canned carrots contained 100 to 200 mg. per 100 gm., and beet greens and chard ran even higher—200 mg. per 100 gm. Fresh spinach and carrots contained 30 to 100 mg. per 100 gm., less than their comparable frozen and canned counterparts.

The variations between ten different samples of West Indian cherry ranged from 11.5 to 16.5 mg. sodium per 100 gm., and for twenty samples of okra from 19 to 34 mg. per 100 gm. These variations may be attributed to such factors as the soil, rain, season of the year, and so on.

The results of the sodium and potassium analyses of Puerto Rican drinking waters are recorded in Table 2. Also included is the type of water supply, i.e., whether from a filtration plant or from deep well.

In general, the drinking waters from deep wells which are near the coast showed the highest sodium content.

Since in eleven municipalities, (Aibonito, Barceloneta, Guanica, Lajas, Las Marias, Maumabo, Mayaguez, Rincon, Salinas, Santa Isabel, and Vieques Island), drinking water contained more than 3 mg. sodium per 100 ml., it is suggested that patients on low-sodium diets living in these communities use distilled water for drinking and cooking purposes.

Values obtained for sodium in this study may be compared with those compiled from the literature (5). In general, our data were within the range of these previously reported for similar products, but were closer to those of Irwin and Schuck (6) than to those of other investigators.

Summary

Sodium and potassium determinations on about 180 foods and 78 public water supplies in Puerto Rico are presented.

References

(1) BALL, C. O. T., AND MENEELY, G. R.: Observations on dietary sodium chloride. J. Am. Dietet. A. 33: 366, 1957.

(2) CLIFFORD, P. A., AND WINKLER, W. O.: Report on the determination of sodium in foods. Gravimetric and flame photometric methods. J. Assn. Offic. Agric. Chemists 37: 586, 1954.

(3) OTERO, J. I., TORO, R. A., AND DE OTERO, P.: Catálogo de los Nombres Vulgares y Ciéntificos de Algunas Plantas Puertorriqueñas (Segunda Edición). Boletin Núm. 37, Estación Experimental Agricola, Univ. Puerto Rico, Rio Piedras, P. R., 1945.

(4) THOMPSON, H. C.: Vegetable Corps. 4th ed. N.Y.: McGraw-Hill Book Co., Inc., 1949.

(5) DAVIDSON, C. S., CLIFCORN, P. A., GABUZDA, G. J., AND ROBINSON, C.: Sodium-Restricted Diets. The Rationale, Complications, and Practical Aspects of Their Use. Natl. Acad. Sci.—Natl. Research Council Pub. 325, 1954.

(6) IRWIN, B. L., AND SCHUCK, C.: Sodium values of a selected group of foods. J. Am. Dietet. A. 27: 98, 1951.

Composition of 95 Foods[1]

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CALCIUM, PHOSPHORUS, magnesium, sodium, and potassium have been analyzed in ninety-five foods used in metabolic balance studies. We are presenting the data for which it was difficult to find comparable analyses and the values that differed from published data (1,2).

Methods

Aliquots of foods used in the Metabolic Research Kitchen were homogenized in a blender with distilled water. The aliquots for determinations of calcium, phosphorus, and magnesium were dried in an oven and then ashed overnight in a muffle furnace at 1200°F. The ash was then dissolved in 10 per cent nitric acid and filtered through Whatman filter paper #42 into a volumetric flask. The residue and the filter paper were re-ashed, again dissolved in 10 per cent nitric acid, and then added to the original filtrate. This was made up to volume with distilled water and specific determinations carried out.

The Clark-Collip-Kramer-Tisdall method as applied to urine was used for food calcium values (3-6). The Fiske and Subarrow method was used for phosphorus analysis (7). The determinations of magnesium in food were done using the same method as for magnesium in urine. This method, a modification of that described by Garner (8), uses an acid-protein-free filtrate to which Titan yellow and sodium hydroxide are added for color development.

To a portion of the original aliquots, 1.5 N nitric acid was added for sodium and potassium determinations. This was then filtered and analysis carried out on the Beckman DU flame photometer.

Results

The results of the analyses are presented in Tables 1, 2, and 3. Calcium and phosphorus analyses of interest are recorded in Table 1. Values for white enriched bread are compared with low-sodium bread, regular butter with low-sodium butter, and whole milk with low-sodium milk.

TABLE 1 Calcium and phosphorus in edible portions of twenty-two foods

FOOD	CALCIUM	PHOSPHORUS
	mg./2100 gm.	*mg./100 gm.*
Bread		
Low-So 'ium	23	18
White, enriched	62	88
Broccoli, frozen—flower and stalks	37	80
Butter		
Regular	16	22
Low-So 'ium	14	19
Cherries, Royal Anne—canned in sirup, 2 Tbsp. juice, no pits	11	26
Cranberry sauce, jellied, canned	5	3
Cream of Rice		
Dry, quick-cooking	183	292
Cooked	34	54
Cream of Wheat		
Dry, quick-cooking	701	729
Cooked	131	136
French dressing	14	17
Gelatin, plain—ready to serve	7	31
Honey—light, strained	0.3	3
Jam, strawberry	4	11
Milk		
Low-sodium	89	87
Whole	113	98
Orange juice—frozen concentrate, ready to serve	11	14
Ralston, Instant		
Dry, quick-cooking	42	453
Cooked	8	84
Tomatoes, canned	33	18
Tomato juice	4	11
Tomato catsup	19	46

Values for magnesium, sodium, and potassium are recorded in Table 2. The comparison of sodium in cheese was made: 100 gm. Cheddar cheese contained 731 mg. sodium; 100 gm. Kraft's low-sodium cheese, 391 mg.; and 100 gm. Cellu cheese, 12 mg. Wieners labeled "salt-free" (100 gm.) contained 646 mg. sodium.

[1]Received for publication February 23, 1959.

[2]The authors wish to acknowledge the cooperation and assistance of B. J. Kennedy, M.D., Associate Professor of Medicine and Director of the Metabolic Research Unit.

TABLE 2 Magnesium, sodium, and potassium in edible portions of seventy-eight foods

FOOD	MAG-NESIUM	SODIUM	POTAS-SIUM
	mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*
Apples—raw, skin, no core	7	—	—
Apple juice—canned	5	—	—
Applesauce—canned, sweetened	5	—	120
Apricot sauce—canned in sirup, 2 Tbsp. juice	8	—	208
Asparagus—canned, green, drained solids	15	—	243
Bacon—medium fat			
Raw, slices	15	—	—
Broiled or fried, drained	100	—	—
Banana—raw	31	—	589
Beans			
Green—canned, drained solids	13	—	—
Wax—canned, drained solids	15	—	—
Beef steak—cooked	30	—	—
Beets—canned, drained solids	15	233	251
Blueberries—canned in sirup, 2 Tbsp. juice	4	0.6	68
Bread			
Low-sodium	16	—	—
White enriched	23	—	—
Whole wheat	24	—	—
Broccoli frozen—flower and stalks	28	—	—
Butter			
Regular	3	—	50
Low-sodium	2	—	—
Buttermilk, cultured	11	57	159
Cake, angel food	15	276	269
Carrots—fresh, pressure-cooked	13	79	326
Cheese			
Cellu	—	12	—
Cheddar	43	731	78
Kraft's low-sodium	—	391	—
Cherries, Royal Anne—canned in sirup, 2 Tbsp. juice, no pits	9	—	233
Chicken—white or dark meat, cooked	31	—	—
Cookies—vanilla wafers	16	421	105
Corn—canned, drained solids	19	—	—
Corn flakes	15	—	—
Cornmeal			
Dry, quick-cooking	47	2	188
Cooked	9	0.3	35
Crackers			
Graham	40	1042	213
Soda	29	1843	158
Cranberry sauce—jellied, canned	2	—	—
Cream—light, table or coffee	11	71	209
Cream of Rice			
Dry, quick-cooking	130	5	141
Cooked	24	0.9	26
Cream of Wheat			
Dry, quick-cooking	23	567	180
Cooked	4	106	34
Egg, whole	19	183	215
French dressing	10	800	218
Fruit cocktail—canned in sirup, 2 Tbsp. juice	7	—	—
Gelatin—plain, ready to serve	4	112	2
Grape juice—bottled	4	7	24
Grapefruit sections—canned in sirup, 2 Tbsp. juice	11	10	126
Ham—Armour's canned, medium fat, cooked	20	1145	293
Honey—light, strained	3	—	—
Jam, strawberry	5	—	—
Ice cream, vanilla	18	68	185
Lemon juice—fresh	6	—	
Lettuce—raw	6	—	
Mayonnaise	—	702	53
Milk			
Low-sodium	5	1	313
Whole, pasteurized	14	53	162
Oatmeal			
Dry, quick-cooking	199	2	474
Cooked	37	0.4	88
Oranges—raw	17	—	—
Orange juice—frozen concentrate, ready to serve	15	2	229
Orange-grapefruit juice—canned, unsweetened	9	1	245
Peach sauce—canned in sirup, 2 Tbsp. juice	6	—	126
Pear sauce—canned in sirup, 2 Tbsp. juice	6	—	112
Peas			
Canned, drained solids	16	—	—
Frozen	32	181	193
Pineapple			
Juice—canned, unsweetened	15	—	—
Sauce—canned in sirup, 2 Tbsp. juice	14	—	—
Plum sauce, purple—canned in sirup, 2 Tbsp. juice, no pits	5	—	154
Pork loin—medium fat, cooked	30	86	378
Potato—pressure-cooked	19	—	—
Ralston ,Instant			
Dry, quick-cooking	168	2	421
Cooked	31	0.5	79
Raspberries—canned in sirup, 2 Tbsp. juice	13	1	92
Seven-Up	—	13	1
Sherbet, orange	11	27	106
Soup			
Chicken noodle, ready to serve	—	413	24
Tomtao, ready to serve	9	903	307
Vegetable, ready to serve	10	—	—
Tomatoes			
Canned	15	127	229
Raw, with skins	18	—	377
Tomato catsup	23	—	—
Tomato juice—canned	7	—	—
Veal cutlet—boned, cooked	35	—	—
Vinegar, cider	—	3	109
Weiner—"salt-free"	—	646	232

TABLE 3 Sodium and potassium in coffee and tea

BEVERAGE	SODIUM	POTASSIUM
	mg./240 cc.	*mg./240 cc.*
Coffee		
Instant (Folgers)—2 gm. dry coffee dissolved in 240 cc. water	0.2	254
Regular grind—50 c. coffee from 1 lb. coffee; drip method; 240-cc. aliquot	2	190
Tea—1 tea bag (0.15 gm. Orange Peko and Pekoe and cut black tea) steeped 3 min. in 240 cc. water	0	39

Low-sodium milk (100 gm.), produced by a local dairy by a national process in which the milk is passed through a zeolite filter where the sodium ions are exchanged for potassium ions, contained 1 mg. sodium and 313 mg. potassium, in comparison with 53 mg. sodium and 162 mg. potassium in whole milk (100 gm.) Three eggs were analyzed; values ranged from 95 to 100 mg. sodium per egg.

In Table 3 are recorded the sodium and potassium values for coffee and tea.

Summary

Ninety-five foods were analyzed for calcium, phosphorus, magnesium, sodium, and potassium. Values of interest are recorded for reference use.

References

(1) WATT, B. K., AND MERRILL, A. L.: Composition of Foods—Raw, Processed, Prepared. USDA Agric. Handbook No. 8, 1950.

(2) DAVIDSON, C. S., CLIFCORN, L. E., CLIFFORD, P. A., GABUZDA, G. J., AND ROBINSON, C.: Sodium-Restricted Diets. The Rationale, Complications, and Practical Aspects of Their Use. Natl.

Acad. Sci.—Natl. Research Council Pub. No. 325, 1954.

(3) KRAMER, B., AND TISDALL, F. F.: A simple technique for the determination of calcium and magnesium in small amounts of serum. J. Biol. Chem. 47: 475, 1921.

(4) TISDALL, F. F.: A note on the Kramer-Tisdall method for the determination of calcium in small amounts of serum. J. Biol. Chem. 56: 439, 1923.

(5) CLARK, G. W.: The micro determination of calcium in whole blood, plasma, and serum by direct precipitation. J. Biol. Chem. 49: 487, 1921.

(6) CLARK, E. P., AND COLLIP, J. B.: A study of the Tisdall method for the determination of blood serum calcium with a suggested modification. J. Biol. Chem. 63: 461, 1925.

(7) FISKE, C. H., AND SUBBAROW, Y.: The colorimetric determination of phosphorus. J. Biol. Chem. 66: 375, 1925.

(8) GARNER, R. J.: Colorimetric detetrmination of magnesium in plasma or serum by means of Titan yellow. Biochem. J. 40: 828, 1946.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Henry Albright Mattill—November 28, 1883–March 30, 1953

One who did pioneer work on vitamin E, its properties, and physiologic functions was Henry A. Mattill, devoted teacher, effective research worker, and kindly gentleman. As in many other cases cited in this series of biographical sketches, the motivation for a career in science for Mattill was provided by his college teacher. Mattill credits his chemistry professor, Edward W. Morely of Western Reserve University, with kindling his desire to make chemistry his life's work.

Mattill always jealously guarded his own time as a teacher; for him, teaching was a privilege; during the twenty-five years he spent at the State University of Iowa, over two thousand medical students took his biochemistry courses. As a teacher, his presentations were always methodical and well organized; he was also the wise counsellor who could provide helpful advice, find a job and, at times a small loan for those in need.

As a research worker, Mattill's interest was in nutrition. His doctoral dissertation in 1910 was on "The Influence of Water-Drinking with Meals Upon the Digestion and Utilization of Proteins, Fat, and Carbohydrates." He then began studies on nitrogen metabolism, and later work with his own graduate students included studies on the biologic value of the proteins of meat and cereals.

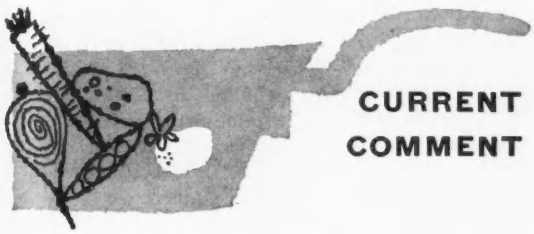
During World War I, Mattill worked on problems of Army foods under Dr. John R. Murlin, then Lt. Colonel in the Sanitary Corps and Director, Division of Food and Nutrition, Medical Department, U. S. Army. After his discharge in July 1919, Mattill joined Murlin's staff at the University of Rochester in New York and began studies on the nutritive properties of milk. He observed that young rats failed to reproduce on milk alone. With the addition of butterfat and starch, reproduction was improved.

At about this time, Herbert Evans' paper appeared on vitamin E. Mattill showed that the lack of this fat-soluble vitamin produced sterility in the male rat as well as affected the female. The kind and amount of dietary fat influenced reproduction, and Mattill believed that it was not only the amount of vitamin E present in the fat but also that the extent of destruction of vitamin E was a factor. This he confirmed by experiment and found that vitamin E could be protected by antioxidants and was itself and antioxidant. These studies were continued at the State University of Iowa where Mattill went in 1927 as Head of the Department of Biochemistry. He demonstrated that vitamin E was essential for the survival of rabbits; without it, they developed muscular degeneration and paralysis.

Henry Albright Mattill was born November 28, 1883 in Glasgow, Missouri, the son of the Reverend Henry and Emma Fryhofer Mattill. After graduation from Western Reserve University (1906), he went to the University of Illinois and obtained his Ph.D. (1910) in biochemistry under Philip B. Hawk. For the next three years he taught biochemistry and physiology at the University of Utah and in 1915 joined Dr. Murlin in his work on Army nutrition problems.

Dr. Mattill was President of the American Society of Biological Chemists (1952), he was a charter member of the American Institute of Nutrition and served on the editorial boards of *Biological Abstracts, Proceedings of the Society for Experimental Biology and Medicine, Physiological Reviews,* and *Journal of Nutrition.* He retired in 1952 and died the following year of a malignancy.

REFERENCES: Editorial. Chem. Engin. News 22: 4548, 4550, 1950; Berg, C. P.: Henry Albright Mattill. J. Nutrition 66: 3, 1958.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*



Administrative and Financial Control of a Dietary Department[1]

RICHARD L. SEJNOST, M.S.H.A.

Associate Director,
Harper Hospital,
Detroit

THE IMPORTANCE of the dietary department to the financial health of the hospital cannot be underestimated. Your department spends on the average about $1000 per bed per year, or 20 to 25 per cent of the hospital dollar (1). When talking of money in these significant amounts, it is evident that the hospital may operate at a deficit or in the black depending on the financial operation of the dietary department.

There are four primary functions of the dietary department. The first is administrative, which can be broken down into organization and finance. The second is therapeutic; the third is educational; and lastly comes research.

I would like to mention briefly the research function, before considering administrative problems. I mention research because it has a direct effect on the organization and finances of your operation, although it is the function most frequently neglected. When I speak of research, I do not mean theoretical and highly technical investigation into diet therapy. The research of which I speak involves the everyday operation of your department.

Organization

Organization has been defined (2) as "the structural relationship between the various factors of an enterprise." The need for a formal organization develops whenever more than one person is responsible for a given function. The one-man grocery store doesn't need a formal organization. He is it. As soon as he hires his first clerk, then organization is required. It will be a simple and informal organization, but somewhere the duties of the clerk and the owner must be differentiated and defined. These are basically job descriptions. As his business grows so that he needs several clerks, then an organization chart is needed in addition to job descriptions. Only then can the owner be assured that someone is responsible for each necessary function of his grocery. Only with an accurate organization chart can he be assured that there are clear lines of communication and that the principle of no one having two bosses is observed.

Organization charts and accurate job descriptions are absolutely necessary in any good organization, and, without them, an unhappy and inefficient work force is an eventual certainty. They are not, however, a panacea, nor are they static. The chart and the job descriptions can't be filed and forgotten. There must be changes in any organization which is progressive and dynamic, and unless these changes are reflected in these administrative tools, the tools are worthless.

Much has been written concerning methods improvement and work simplification. Many hospitals have established formal programs, and some larger hospitals have even assigned full-time personnel to the problem of keeping methods and procedures up to date. With labor costs about 50 per cent of total cost, the efficient use of labor is just as important as food purchasing policies. It has been well said, I think, that any method or procedure more than five years old is outdated and that a better method can be developed.

There are methods for doing time-and-motion studies which even the uninitiated can adopt. It behooves you, as the manager of your department, to make time available to apply these methods. Not only does this promote greater satisfaction among employees, but the savings in costs can be appreciable. The tight financial situation in 1958 showed many of us what can be accomplished along this line. The operating savings forced on us by the general economic conditions demonstrated that we *could* cut costs without cutting services. We cannot forget what can be done, even though the emergency appears to be over.

Just as important as methods improvement and work simplification are new products and equipment that are available in the field. To fail to keep up with what is new in the field is to neglect an important part of your job. Probably every dietitian has switched to frozen orange juice. We think it's just as tasty as fresh orange juice. Processing it is more sanitary, more uniform, and less costly. But, have you investigated individually portioned meats, prepeeled potatoes, infra-red ovens, and milk dispensers? Constant vigilance is needed to evaluate all of these innovations.

Reporting

Next I would like to discuss reporting. Probably the most important thing in writing reports is to remember your reader (3). Keep in mind that, al-

[1]Presented at the Annual Meeting of the Michigan Dietetic Association at Boyne Falls, on April 24.

though writing a report may be a tedious and dreaded task, all of your work is in vain if your report isn't used by the person to whom it is addressed. Your administrator is not a dietitian. Your statistics and other information must be presented so as to be interesting and, more importantly, understandable by him. This is one of your best methods of communicating with your administrator, and the importance of conciseness and clarity cannot be overestimated. The frequent use of charts and graphs can make a report not only more understandable, but can cut paragraphs out of your narrative.

To be valuable, a report must be consistent, *and* it must be honest. The statistics which you report must be reported in exactly the same way month after month to be of any value. Your analysis of problems—in fact, your entire report—must be honest and objective. Don't color the facts, and be sure they *are* facts. Opinions are valuable, but they must be stated as such and not as fact.

The content of reports to your administrator can be broken down into two categories—the basic and what I call the "ethereal" for want of a better term.

In the first category, the administrator should find the meat of your report. An analysis of your financial situation should introduce the report. This, of course, is reported to the administrator by the accounting department, but you are the one who can analyze and interpret the figures for him. A comparison of your actual and budgeted expenses and the reasons for discrepancies are important. Any unusual increase or decrease in any income or expense item should be explained.

Next, the administrator wants to know about your personnel situation. Because labor costs represent such a large part of the total hospital cost, he wants to keep abreast of what is going on in your department concerning personnel. Terminations and discharges are of particular interest and should be discussed fully. Certainly two things are necessary in such a discussion: the length of service of the employees involved and the reasons for their departure.

Statistics are also necessary, such as the number of meals served, the number of hours worked by your employees, the number of hours paid for, and your manhour:meal ratio. This is a particularly good place to use charts and graphs.

Because your department contains such a large amount of expensive mechanical equipment, the administrator wants to know about any major repairs or breakdowns you have experienced during the month. Perhaps during this month you first realized that a dishwashing machine will need to be replaced in a year or so. It is important that the administrator know this before the situation becomes an emergency.

Next, the administrator is interested in any special problems you have encountered during the month. These may be within your department, or they may involve other departments. Every problem presented should have a possible solution. For instance, if the nursing department has been slow in getting trays distributed to patients and it has therefore been impossible to furnish hot food, report the steps you have taken to solve the problem. If you need the administrator's help, ask for it, but don't just dump the problem on his desk and consider that you have done your duty.

What are your long-range plans? The administrator would like to know. These don't change very rapidly, and they may be the same each month, but they are worth repeating. If you merely operate your department on a day-to-day basis and solve problems as they arise, you are not doing all of your job.

After presenting these basic points in your report, you can go on to the "ethereal," in which you can "let yourself go" and tell your boss what you want to tell him. This is the place to report your accomplishments and, just as important, your failures. If you stick to the basic information discussed above, important as it may be, you are not telling the complete story of your operation. The over-all view of your work is the part of your report which is most difficult to write, for, to make it worth while, you must be able to sift the wheat from the chaff and to point out those things which you feel are most important to your administrator.

Financial Control

When we talk about financial control, we must first agree that the responsibility for financial control in the dietary department belongs to the dietitian. To the extent that she may abdicate this responsibility to the administration or to the accounting department, she loses control of a big and important part of her organization.

A number of methods of establishing financial control are probably commonly understood and known. I will therefore limit my remarks to budgeting and cost analysis, the mere mentioning of which is enough to throw the uninitiated into a tailspin. Those of you who have established budgetary and cost analysis systems know that it is next to impossible to maintain proper financial control without them.

COST ANALYSIS

Cost analysis is nothing more than a method to determine the cost of the services of a function or a department. To be completely effective, a cost analysis system should be applied hospital-wide. The American Hospital Association has published a manual which makes this simple, even for the small-

est hospital (4). Even without a hospital-wide application, however, there is much that you can accomplish yourself by studying readily available records.

Let's assume that you have been forced into some detailed analysis of your costs by your administrator who feels that "dietary costs are too high." He will not be very sympathetic if your only defense is that raw food costs are high, that prices are too low in the cafeteria, that you are doing too much catering, or that the number of modified diets has increased. These are mere impressions, and until you can back them up with figures, they are worthless.

The first thing that you want to do is to show the cost of food service per patient day, perhaps broken down further by modified diets as opposed to house diets. To come up with an accurate figure for this, you must be certain to exclude all labor, supplies, food, and other expenses which are not directly applicable to patient food service. This means that all expenses for the cafeteria and your catering must be known and deducted from total costs to learn the patient food service expense.

The same holds true for the cafeteria operation. You must assemble all the applicable costs, pro-rating labor and food costs and including the overhead operation of the cafeteria itself, to obtain a realistic cost. Here you are trying to determine the exact cost of operating the cafeteria as if none of your other services existed. If you are operating a pay cafeteria and the policy of the hospital is to have a break-even operation, then there is no other way you can be assured that the cafeteria is in fact breaking even. Your ultimate goal is to have a mark-up over raw food so that your cafeteria items can be adequately priced to recover the cost of the operation. Even if you are not operating a pay cafeteria, it is necessary to accumulate these costs so that the administrator can realize the amount of "fringe benefits" being provided to employees.

Catering is another important factor in over-all dietary department costs. If you can show administration what your catering business really costs, he is in a position to judge whether it should be reduced or encouraged. He certainly needs to know that it is not a justifiable charge against food service for patients.

A good cost analysis system makes it possible for you to compare your operation with similar institutions. It is impossible for those who have not done a cost analysis to discuss intelligently your relative costs of operation. You cannot compare yourself with any other organization as long as all of your costs are lumped together into three or four categories, such as labor, food, supplies, and utilities.

The details of a cost analysis system are beyond the scope of this paper. There *are* adequate materials available for you to undertake this job on your own, if you only will. It is important, however, that those who operate under such systems understand how they operate. If you do not, take time to sit down with your accountant to learn how the system functions. It is not enough that you go through the motions of feeding him the raw data. You have the obligation to question any part of the system you do not understand and to know the significance of the end product.

BUDGETS

Finally we come to budgeting. At this point, I know that many of you are thinking: "Budget! I wouldn't have anything to do with one. It's a nuisance and makes my operation too inflexible. What would I do if I ever ran out of money? I still must feed patients." Perhaps budgeting's bad reputation comes from the stories we have all heard of inflexible line budgets. As a matter of fact, some would almost say these budgets are impossible and the only reason they can be lived with is that people have learned how to get around them. This is not the kind of budget I mean. There are probably as many definitions of budgets as there are brands of tomato juice, but I have chosen three which, to me, tell the story.

(a) A budget is primarily a blueprint of a projected plan of action of a business for a definite period of time (5).

(b) Budgetry control may be defined as accounting in terms of the future (6).

(c) A budget represents a standard, a measuring stick with which to measure the accomplishments of the various activities of the business (7).

Of the three, I like the second best.

I feel that three objectives may be gained by budgeting. The first concerns planning and forecasting. If it accomplishes nothing else, it forces the budgeter at least once a year to do some solid thinking about his plans for the future. He must think of any anticipated changes in procedure, and he must estimate the cost of producing the quantity and quality of his service in the coming year.

The second objective concerns coordination of the various units. This is probably most important to the administrator. The budget allows him to look at the estimates of all department heads and make certain available funds are being applied equitably among the operating departments. This particular objective is also important to those who manage large dietary departments, for you know that your available funds are justly divided among your various units.

The third objective is one of control. This is the one I think we fear most. The control of which I speak here, however, is sort of a control over your own fate. At the beginning of the year you are required to estimate your expenses for the year, based

on past experience. Your accounting department should report to you monthly showing how you are doing in comparison with what you estimated. Monthly reporting such as this allows you to take corrective action where needed. This may be checking into waste or checking into menus, or it may mean that the budget itself needs to be adjusted. Perhaps the patient census was higher or lower than had originally been anticipated. Maybe several catering functions occurred in one month. This made you go over your budget for food and labor for that month, but you know from past experience that the next month it will be reduced, in which instance no action is necessary. You have an opportunity at least once a month to look at your operation to analyze whether you are doing as well as you thought you could at the beginning of the year.

It is important to mention that no department head at Harper Hospital receives a silver star for staying under his budget. Being under your budget can be just as sinful as exceeding it. This is not to say that we are not interested in saving money. If, because of your work simplification program, you have been able to change a procedure to eliminate an employee, this is commendable. If, on the other hand, you are able to stay under your budget only because you put in a little cushion "just in case," this is censurable. It is quite possible that the rate structure of the hospital has been based on the budgets of the various departments. If the Board of Trustees felt it necessary to raise the room rate and if these rates have been raised unnecessarily because of an inflated budget, then we would have been extremely negligent in our responsibility to the community in furnishing hospital care at the least possible cost. When preparing an estimated budget for your operation, the same intellectual honesty is required as in writing reports.

Labor Costs

What about a labor budget? This really isn't so much a budget as it is a matter of accumulating and reporting your labor costs. When you prepared your budget, you estimated the total dollar cost for labor for your department. This is an important figure since, as I have mentioned before, your labor costs are about half of your total cost.

There is one tool which can be of extreme value in determining the efficiency of your labor and in knowing whether you are getting your labor money's worth. In our hospital the accounting and payroll department breaks down the payroll costs for each pay period. The following factors are used: payment for actual hours worked, payment for sick time, vacation, holidays, and other data as required. The payroll costs for other than hours worked we call "non-productive hours." Thus total payroll costs might rise while the actual hours worked, that is the productive labor, has gone down. If most of your employees take vacations in the summer, for instance, this would be the case. On the other hand, given the same set of circumstances, your payroll might conceivably remain the same if you didn't hire relief workers; here your productive hours would go down. The same might be true during a sickness epidemic—which usually happens during an extremely high census period when sick workers must be replaced by relief personnel. In this instance, the total payroll costs would go up, productive hours would remain the same, and non-productive hours would go up.

My plea here is for budgeting your labor by hours as well as by money. In this way you are not affected by wage adjustments, sick pay, vacation pay, and other pay for non-productive hours. We have found it very helpful to keep a running graph plotting the patient census, hours worked, and hours paid for. Here on one sheet of paper we can see at a glance trends in hours worked, any increase or decrease in sick pay, and so on. It provides an opportunity to institute controls if there are abuses of so-called fringe benefits or to look to efficiency if the actual hours worked are not keeping fairly well in line with the patient census.

It has not been my intent to give you much "how to do it" information. I hope, however, that I have stimulated you to concern yourselves with more than the daily production and service of food. One of the most important facets of any manager's job is to sit back from time to time and look at his organization to see where he has been and where he is going. Self-evaluation, like confession, is good for the soul and cannot help improve the status of your department and the quality of your food service.

References

(1) LAWTON, R. P.: Standardization leads to lower costs. Mod. Hosp. 89: 106, 1957.

(2) SPRIEGEL, W. R.: Principles of Business Organization. N.Y.: Prentice-Hall, Inc., 1946.

(3) ROSWELL, C. G.: Making your reports more meaningful. J. Am. Dietet. A. 35: 351, 1959.

(4) Cost Finding for Hospitals. Chicago: Am. Hosp. Assn., 1957.

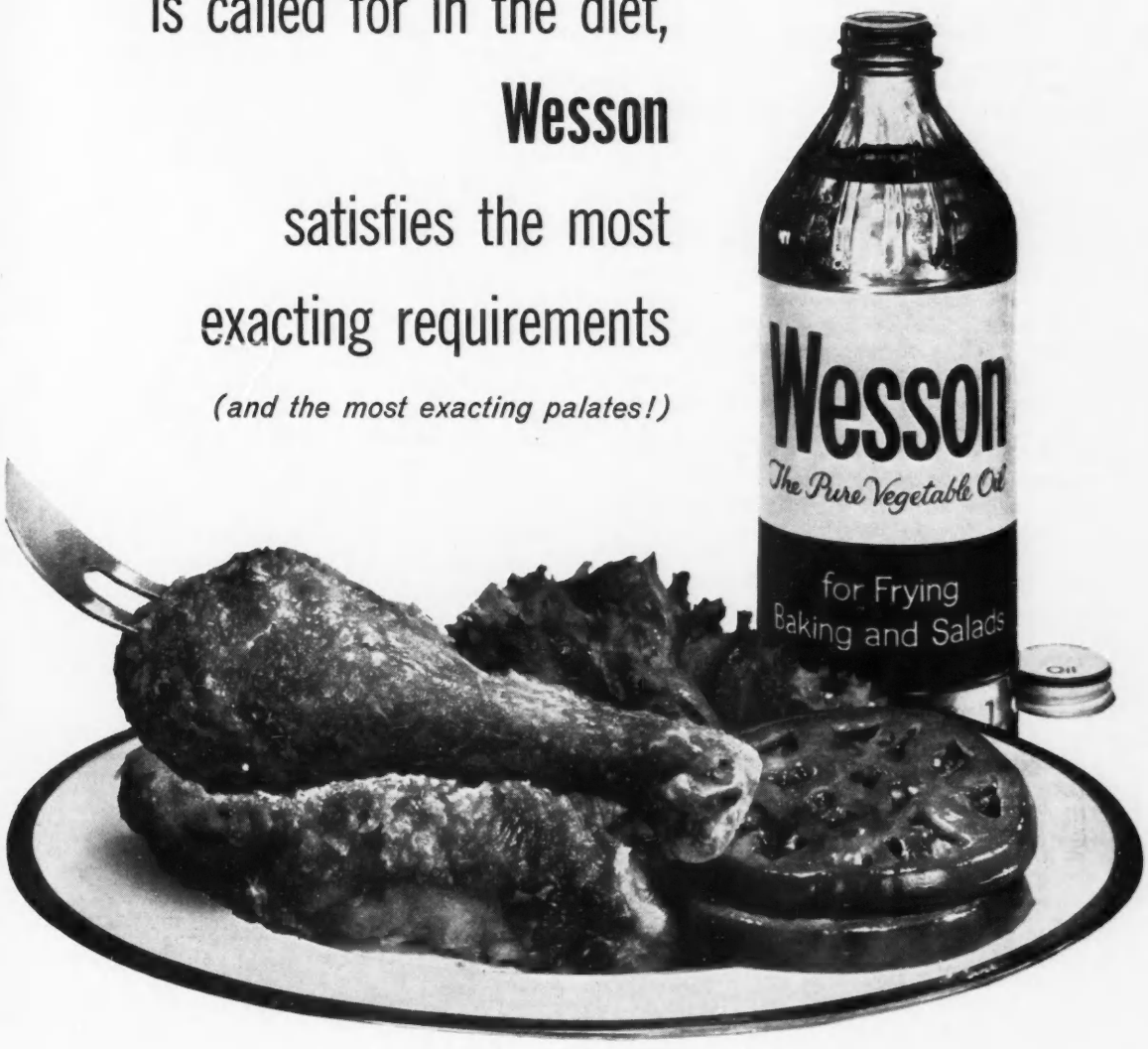
(5) LANG, T.: Cost Accountants' Handbook. N.Y.: Ronald Press Co., 1944, p. 1227.

(6) HILGERT, J. R.: Cost accounting for sales. N.Y.: The Ronald Press Co., 1926, p. 32. *Cited in* Cost Accountants' Handbook (Lang, T., ed.). N.Y.: Ronald Press Co., 1944, p. 1227.

(7) CROCKETT, H. G.: Cost standards and budgets. Natl. Assn. Cost Accountants Bull. 19: 315 (Section 1), 1937. *Cited in* Cost Accountants' Handbook (Lang, T., ed.). N.Y.: The Ronald Press Co., 1944, p. 1227.

Where a poly-unsaturated oil is called for in the diet, **Wesson** satisfies the most exacting requirements

(and the most exacting palates!)



More acceptable to patients. Wesson contributes greatly to the palatability of food and, thus, can be important in encouraging patients to maintain prescribed restricted diets. By the criteria of odor, flavor (blandness) and lightness of color, housewives prefer Wesson.*

Uniformity you can depend on. Wesson has a poly-unsaturated content better than 50%. Only the lightest cottonseed oils of highest iodine number are selected for Wesson, and no significant variations are permitted in the 22 exacting specifications required before bottling.

Economy. Wesson is consistently priced lower than the next largest seller, a not unimportant consideration, where poly-unsaturated oil is called for.

Wesson's Active Ingredients:	
Linoleic acid glycerides	50% to 55%
Phytosterol (predominantly beta sitosterol)	0.4% to 0.7%
Total tocopherols	0.09% to 0.12%
Never hydrogenated—completely salt free	

* Reconfirmed by recent tests against the next leading brand with brand identifications removed, among a national probability sample.

Simplified Recipes for High Milk-Protein Bread[1]

HELEN H. WELTON, C. E. ROE,
and SAMUEL R. HOOVER

Dairy Products Laboratory,
Eastern Utilization Research and
Development Division,
Agricultural Research Service,
Department of Agriculture,
Washington, D.C.

A HIGHLY NUTRITIOUS type of white bread containing 25 lb. nonfat dry milk per 100 lb. flour has recently been reported by this Laboratory (1). Procedures for making it on a pilot scale comparable to commercial bakery conditions by the straight-dough process were given.

This bread is firmer than the loaf usually sold by commercial bakers. It has a rich, dark crust; otherwise, it differs little in appearance from the usual commercial loaf. It also has good resistance to staling.

The flavor of this new bread is excellent, without any pronounced effect due to the added nonfat dry milk. It makes well flavored toast that has a rich color, due to the relatively high lactose content of the milk solids.

The added nonfat dry milk increases the protein content of the bread about 30 per cent, depending on the type of flour used. The biologic value, as shown by rat-growth tests, is twice as great as a commercial-type bread containing 4 per cent nonfat dry milk when calculated on a protein basis. Thus, the nutritional value of the protein (biologic value × protein content) is about 2.5 times that of the usual commercial-type bread.

Other valuable dietary ingredients are supplied by the nonfat dry milk, the most notable being calcium. The added nonfat dry milk contributes 760 mg. calcium in a 1-lb. loaf. This amount, added to the approximately 250 mg. derived from the wheat, gives a total of about 1 gm. calcium per 1-lb. loaf. Consumption of ¼ lb. daily would contribute about 30 per cent of the 800 mg. calcium recommended for adult men.

This highly nutritious bread has many possible applications in the American diet as a specialty bread, despite the increased cost of about 1.3 cents per 1-lb. loaf. It would have special merit for the aged and for those in hospitals and mental institutions who do not have sufficient appetite to eat an adequate diet. Moreover, the availability of surplus nonfat dry milk without cost to the School Lunch Program and to federal institutions makes a consideration of this use especially timely. Tests have been initiated in cooperation with the Institute of Home Economics to adapt the proposed methods to institutional recipes and to evaluate acceptance of this type of bread in such institutions.

A group of simplified recipes for this specialty bread have been developed which have potential use in the small bakery and the home.[2] Conventional and quick methods are described below for this high milk-protein bread, and for four variations, all based on the use of approximately 25 per cent added nonfat dry milk. The recipes containing eggs and molasses require more flour; therefore, the amount of milk solids in these recipes is slightly less than 25 per cent, based on the weight of flour.

[1]Received for publication May 6, 1959.

[2]The cooperation of Mrs. A. C. Reynolds in developing the simplified recipes is gratefully acknowledged.

Reference

(1) ROGERS, L. V., AND WELTON, H. H.: High milk-protein bread. J. Dairy Sci. 42: 62, 1959.

Straight Dough Process Bread

YIELD: 2 650-GM. LOAVES

Ingredients

1 cake compressed yeast
¼ c. lukewarm (100°F.) water
2 c. boiling water
3 c. nonfat dry milk (instant)
or
1½ c. nonfat dry milk (high heat) (approximately 190 gm.)
2 Tbsp. shortening
2 Tbsp. sugar
2 Tsp. salt
6½ c. sifted, all-purpose white flour (approximately 760 gm.)

Crumble yeast into lukewarm water, let soften, and stir to dissolve.

Measure boiling water into mixing bowl and gradually stir in milk powder, beating with egg beater if necessary. Then stir in shortening, sugar, and salt, mixing well. Let cool to lukewarm (100°F.).

Stir 2 c. flour into liquid. Mix thoroughly. Add

in the season of

acute infections, extra

CITRUS

provides the increased

VITAMIN C

and fluid needed during

FEVER

to prevent deficiency and

help maintain resistance*

*Tisdall and Jolliffe note the systemic relation in animals between vitamin C and resistance to infection, with increased needs evident in upper respiratory streptococcal infections.

– In: Clinical Nutrition ed. by Norman Jolliffe et al. New York, Paul B. Hoeber, Inc., 1950, pp. 590-91, 637-38.

Florida *Citrus*

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FLORIDA CITRUS COMMISSION • LAKELAND, FLORIDA

yeast mixture to dough and stir well. Add enough of remaining flour until a smooth, soft dough is formed and it handles easily. Add more flour if necessary.

Lightly flour pastry board and place dough on it. Cover with bowl and let rest 10 min.

Knead dough until outside is smooth and elastic (about 10 min.). Dough should not stick to board or hands. Knead as follows: fold dough over on itself toward you; push dough with heels of hands away from you; then give dough a quarter turn, and repeat.

Round up dough and return to clean, ungreased mixing bowl. Lightly grease surface of dough to prevent drying out; cover first with wax paper, then a cloth. Place in a warm spot, 80° to 85°F., away from drafts to rise until double in volume (about 1½ to 2 hr.). When rising is sufficient, a dent made by pressing a finger into dough remains. Dough is now ready for second rising.

Place in a bowl. Promptly punch down and fold edges toward center (about 2 min.) until dough is reduced to original bulk. Turn dough over so that smooth side is up, grease lightly, and cover as before. Let rise again until double in volume (about 50 to 60 min.). Dough is now ready for molding.

Punch down and turn out on lightly floured board. Divide into two equal portions, shape into balls, cover with bowls, and let rest 10 min. Flatten ball of dough into oblong shape, using palms of hands. *Don't punch or pound the dough.* Fold half of long side over, seal gently. Flatten again with hands. Lift dough at ends. Pull to elongate to about twice the length of baking pan, slapping on table several times. Overlap ends at center. Seal the edges with palms and fingers, or use knuckles. Fold lengthwise sides to the center and seal seam and ends. Roll dough lengthwise to round into cylindrical shape. This finishes the seal.

Pans should be greased on the *bottom* only. Place dough, seam side down, in 9 by 5 by 3 in. loaf pans. Pans should be about half full. Do *not* press corners of loaf into corners of pan. Lightly grease dough, cover as before with wax paper and cloth, and let rise until doubled (about 1 hr.). Sides of dough should now reach top of pan and center should be well rounded. A light touch leaves a slight dent.

Place pans in center of oven, not touching each other or sides of oven. Bake at 350°F. for about 50 to 55 min. When done, bread should be well risen with a fully rounded top. Loaves should sound hollow when tapped on the bottom. Immediately remove bread from pans, place on wire cooling racks or across top edges of pans away from drafts.

For a crisp crust, neither grease nor cover loaves while cooling. For a soft crust, brush top of loaves with fat or salad oil after removing from pans and cover with cloth for a few minutes to soften.

(If a more salty taste is desired, the amount of salt may be doubled. This will produce a denser loaf with a very firm texture.)

Quick Yeast Bread

(first and second risings eliminated)

SAME INGREDIENTS AS FOR STANDARD BREAD

Combine ingredients the same way. Lightly flour pastry board and place dough on it. Cover with bowl and let rest 10 min. Knead bread as before. Cut dough in half, round up portions, cover with bowls, let rest 10 min. Shape into loaves as before. Place in pans and grease top lightly. Cover as before and let rise in warm place until double in volume (about 1½ hr.). Bake as for straight dough process bread.

Bread may seem doughier and of coarser grain; volume and flavor remain about the same. The time consumed is cut approximately in half.

Variations

(may be made by either the straight-dough or quick method)

Egg Bread

Enrich by adding 2 beaten eggs after the milk mixture has been cooled to lukewarm. This will make a softer dough and a bread of lighter texture.

Raisin Bread

To the standard recipe, add 2 c. raisins, chopped prunes, or nuts. Brown sugar may be used instead of granulated, and grated orange or lemon rind may be added.

Whole Wheat Bread

Substitute whole wheat flour (3¼ c.) for an equal quantity of white flour. Spoon whole wheat flour lightly into cup to measure. Whole wheat bread takes a little longer to rise than white bread.

The sweetening agent may also be varied in several ways:

(a) Substitute 1 Tbsp. brown sugar for 1 Tbsp. granulated sugar.

(b) Substitute 2 Tbsp. brown sugar for 2 Tbsp. granulated sugar.

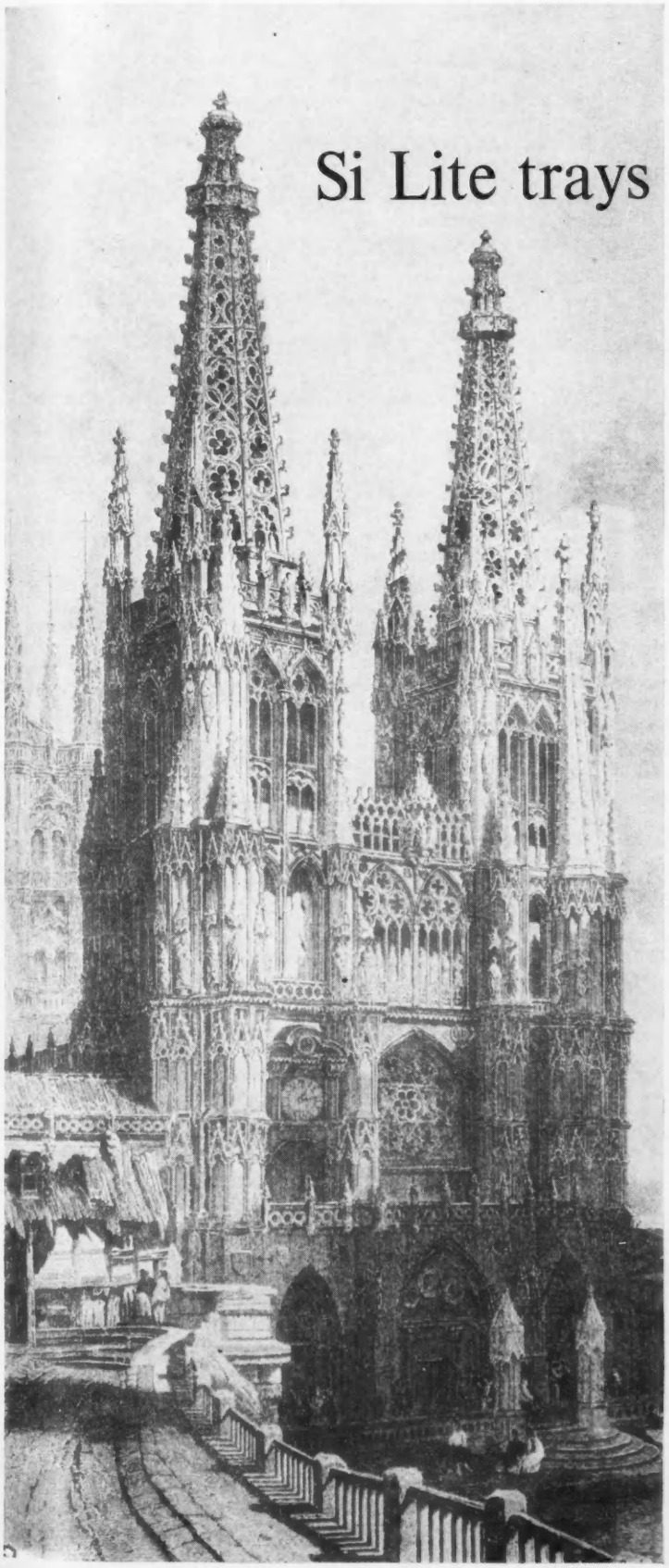
(c) Replace all of the sugar with ¼ c. light molasses, honey, or corn sirup.

Oatmeal Bread

Substitute ¼ c. light molasses for all of the sugar.

Substitute 2½ c. quick-cooking oats for an equal amount of flour. Add the oats in the recipe after the yeast mixture.

The proportion of the American dollar spent for food has dropped steadily since the turn of the century, according to a new study by the U.S. Department of Labor, "How American Buying Habits Change." In 1901, the average city worker's family spent 43 cents out of every dollar for food; fifty years later, this figure is down to 30 cents.



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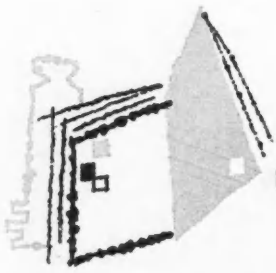

BOOK REVIEWS

Handbook of Diet Therapy. Third edition. By Dorothea Turner. Chicago: The University of Chicago Press, 1959. Cloth. Pp. 222. Price $5.

The *Handbook* is a major contribution to the dietetic literature. At least three salient points have been emphasized and demonstrated in the contents of each edition: (a) the use of the normal dietary regimen as the basis for the therapeutic diet; (b) the standardization of terminology; and (c) the naming and describing of diets in terms of dietetic principles. These objectives are having a significant and beneficial effect on current dietetic practice.

The content is well organized and concisely presented. There is a judicious selection of source material. Its technical soundness is another outstanding feature. Although the *Handbook* is primarily a working tool for the dietitian, it is distinctly useful for the physician and nurse as well. The dietetic profession is indebted to Dorothea Turner, who has written and compiled this valuable text for The American Dietetic Association. —*Elizabeth K. Caso, Nutritionist, Health Department, Cambridge, Massachusetts.*

Nursing Home Management. By Ralph C. Williams, M.D., Margaret Bull Armstrong, R.N., J. Fred Gunter, Edith McCulloch, R.N., and Jack Stiller. New York: F. W. Dodge Corporation, 1959. Cloth. Pp. 230. Price $8.50.

With the growing importance of the nursing home and the home for the aged in our society, and the increasing awareness of the complexities of good nursing home care, it is indeed gratifying to find that experts in this area, from recognized medical facilities and an official health agency, have contributed time and effort to prepare so complete a guide to nursing home management.

The contents, presented in a well organized and straightforward manner, should be a valuable guide to the individual or organization planning a new home; to the nursing home administrator who wishes a reference guide and training manual; and to all professional persons who desire a better knowledge of, and appreciation for, nursing homes, their objectives and responsibilities, in order to cooperate with them in bringing needed care to the aged.

The introduction takes a critical view of the needs of older persons in the U.S. today. The table of contents and index make readily available to the reader information which will help to determine building, organizational, and staffing needs.

The text is clear and concise. Adequate attention is called to administrative needs in the various services within the home, such as medical, nursing, food, housekeeping, and maintenance. Especially well developed are duties which might be expected of nursing personnel with varied background training ranging from that of the registered nurse to the nurse's aide and orderly. Special importance is given to the rehabilitation aspects of nursing home care and to hygiene of the aged. Sample forms for the patient register, charting medical and nursing care, requisitions, purchases, and over-all operation are given throughout the text. The section on food service gives suggestions on supervision, equipment, meal planning, principles of cookery, modified diets, and serving. A safety program with emphasis on employee training is well illustrated. Plans and techniques for evacuation in case of emergency and safety check lists are included.

The appendix provides samples of licensing laws and by-laws for a nursing home, a checklist of essential documents, a sample code of ethics, suggested personnel policies, and a sample maintenance schedule.

Though it is recognized that licensing laws vary in some degree from state to state, and needs of older persons will differ somewhat with locality, cultural group, and so on, the very practicality of this book would seem to make it most valuable, if not a must, to nursing home operators anywhere. Throughout, the book is well written and easily readable; paper and print are excellent.

The authors are commended for the efforts which have gone into the preparation of this book.—*Martha J. Thomason, Chief, Nutrition Division, Cook County Department of Public Health, Chicago.*

Our Food. By M. Swaminathan, D.Sc., and R. K. Bhagavan, D.T.M.&H. (Eng.) Madras, India: Ganesh and Co. (Madras) Private Ltd., 1959. Paper. Pp. 88. Price rupees 1.50 (approximately 30 cents).

The Central Food Technological Research Institute, Mysore, India, under the direction of Dr. V. Subrahmanyan, is engaged in extensive research to determine the nutritive value of foods indigenous to India.

In the book *Our Food,* Doctors M. Swaminathan and R. K. Bhagavan, Division of Dietetics, present information gained from research at the Institute; from other research findings in India; from international organizations such as FAO, and from the Food and Nutrition Board of the National Research Council. Food values and possible uses of Indian multi-purpose food; blends of tapioca and groundnut (peanut) flour; vegetable curds; and other food supplements are discussed.

This book, in its paper bound edition at reasonable cost, should serve well those responsible for the dissemination of "everyday nutrition" facts to the people of India. It is highly informative, brief, and presented in a manner suitable for practical application. The presentation of facts pertinent to food needs of the entire populace of India should aid in planning for expanded production in agriculture.

Dietary requirements for all age groups; tables of food values; suggested food combinations for balanced vegetarian as well as non-vegetarian diets will serve as valuable aids to dietitians and nutritionists working for the improvement of individual and family food habits.—*Mary Rachel Armstrong, Professor and Head, Department of Home Economics, University of Tennessee at Martin.*

RECENT BOOKS RECEIVED

Alcoholism. The Nutritional Approach. By Roger J. Williams Austin, Texas: The University of Texas Press, 1959. Cloth. Pp. 118. Price $2.50.

Conversion Factors and Technical Data for the Food Industry. Sixth edition. By C. G. Harrel and R. J. Thelen. Minneapolis: Burgess Publishing Company, 1959. Simulated leather. Pp. 1426. Price $20.

The Classic French Cuisine. By Joseph Donan. New York: Alfred A. Knopf, Inc., 1959. Cloth. Pp. 324, plus xxiii, Price $5.

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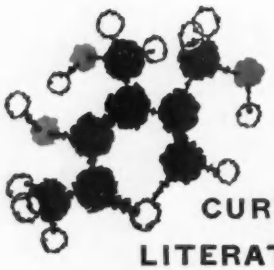


CURRENT LITERATURE

Contributed by Clara Karl Frederick, University of Chicago Clinics; Elizabeth Tuft, Chicago Wesley Memorial Hospital; and the JOURNAL *staff*

ANNALS OF BIOCHEMISTRY AND EXPERIMENTAL MEDICINE (India)

Vol. 19, March, 1959

*Effect of coffee on gastric secretions. V. Subrahmanyan, D. S. Bhatia, C. P. Natarajan, K. M. Narayanan, K. L. Radhakrishnan, and T. R. Doraiswamy.—p. 61.

*Effect of some inorganic salts on water absorption by rice during cooking. B. P. Ghosh and N. Sarkar.—p. 83.

Coffee and Gastric Secretions. Results of *in vitro* and *in vivo* studies on the action of coffee on gastric digestion are reported. Coffee stimulated gastric activity by increasing the free and total acidity as well as peptic activity in the stomach. The practice of drinking coffee in small quantities after food may therefore be a useful one. The results of the *in vitro* experiments showed that the digestibility of milk by trypsin is not altered by admixture with coffee. Digestion by pepsin at lower concentrations of the enzymes is seen to be retarded by coffee, but at higher concentrations no significant differences could be noted.

Inorganic Salts and Rice. The effect of inorganic salts on the absorption of water by rice grains during the process of cooking was studied. The chlorides and sulphates of calcium, magnesium, and sodium were studied. The salts in low concentrations seem to have reduced absorption of water by rice grains. With increased concentrations of salts, there were varied responses, the most marked being a considerable increase of water absorption in presence of magnesium sulphate.

ANNALS OF INTERNAL MEDICINE

Vol. 51, July, 1959

*Symptoms and patients' adjustment after subtotal gastrectomy. H. P. Roth, C. L. Cogbill, and H. M. Onufrock.—p. 23.

Vol. 51, August, 1959

*Subthreshold diabetes. J. Pomeranze.—p. 219.

*Gastric acid secretion in diabetes mellitus. I. N. Marks, C. R. Shumann, and H. Shay.—p. 227.

Adjustment after Subtotal Gastrectomy. Symptoms following gastric resection for peptic ulcer in 100 patients are discussed. Recurrence of symptoms was not a problem, but fatigue and weakness frequently interfered with work or social activities in 56 patients. More than one-third did not return to sedentary positions for six weeks or to laboring jobs for three months. The dumping syndrome occurred in half of the patients. Certain foods commonly produced symptoms after gastrectomy. Of these, milk, foods containing milk, and sweets were most often mentioned.

Subthreshold Diabetes. Diabetes mellitus is a chronic disease which extends over a longer period than the stage in which clinical manifestations and biochemical abnormalities are apparent. The disease process may exist unrecognized for many years. This fact explains the simultaneous diagnosis of the disease and the presence of complications. There is a need for a broader awareness of asymptomatic complications and for checks on familiar histories to insure earlier recognition of the disease. It is during this subthreshold period that the institution of corrective dietary habits can be most effective.

Gastric Acid Secretion in Diabetes. This quantitative study of gastric secretion did not provide evidence in support of the view that acid secretion tends to be below normal in diabetic patients.

ARCHIVES OF INTERNAL MEDICINE

Vol. 104, July, 1959

Plasma glycoproteins, mucoproteins, and mucopolysaccharides. A. J. Bollet.—p. 152.

Vol. 104, August, 1959

Myxedema. H. A. Bloomer and L. H. Kyle.—p. 234.

*Serotonin and the 5-hydroxyindole pathway of tryptophan metabolism. R. M. Donaldson, Jr., and S. J. Gray.—p. 330.

Serotonin-Tryptophan Metabolism. The presence of a vasopressor factor in clotted defibrinated blood has been known for ninety years. This factor, serotonin, was isolated from blood platelets in 1948. Large amounts of serotonin are found in the tumors of malignant carcinoidosis. This syndrome is also characterized by high serum levels of serotonin and abnormal quantities of 5-hydroxyindoleacetic acid, the major metabolite of serotonin in the urine. In malignant carcinoidosis, most of the tryptophan is metabolized by hydroxylation with subsequent decarboxylation to form the biologically active amine, serotonin. There is no direct evidence that the presence or absence of serotonin is a causative factor in the pathogenesis of any other disease.

THE AMERICAN JOURNAL OF CLINICAL NUTRITION

Vol. 7, July-August, 1959

*Relationships between pteridines and other heterocycles (purines, riboflavin, and vitamin B_{12}). H. A. Nathan and H. B. Funk.—p. 375.

*Hematopoietic effects of folic acid metabolites in the megaloblastic anemias. R. W. Rundles.—p. 385.

*Urinary excretion of formiminoglutamic acid. Application in diagnosis of clinical folic acid deficiency. A. L. Luhby, J. M. Cooperman, and D. N. Teller.—p. 397.

*Serum cholesterol response in man to oral ingestion of arachidonic acid. A. Keys, J. T. Anderson, and F. Grande.—p. 444.

*The anti-coronary club; including a discussion of the effects of a prudent diet on the serum cholesterol level of middle-aged men. N. Jolliffe, S. H. Rinzler, and M. Archer.—p. 451.

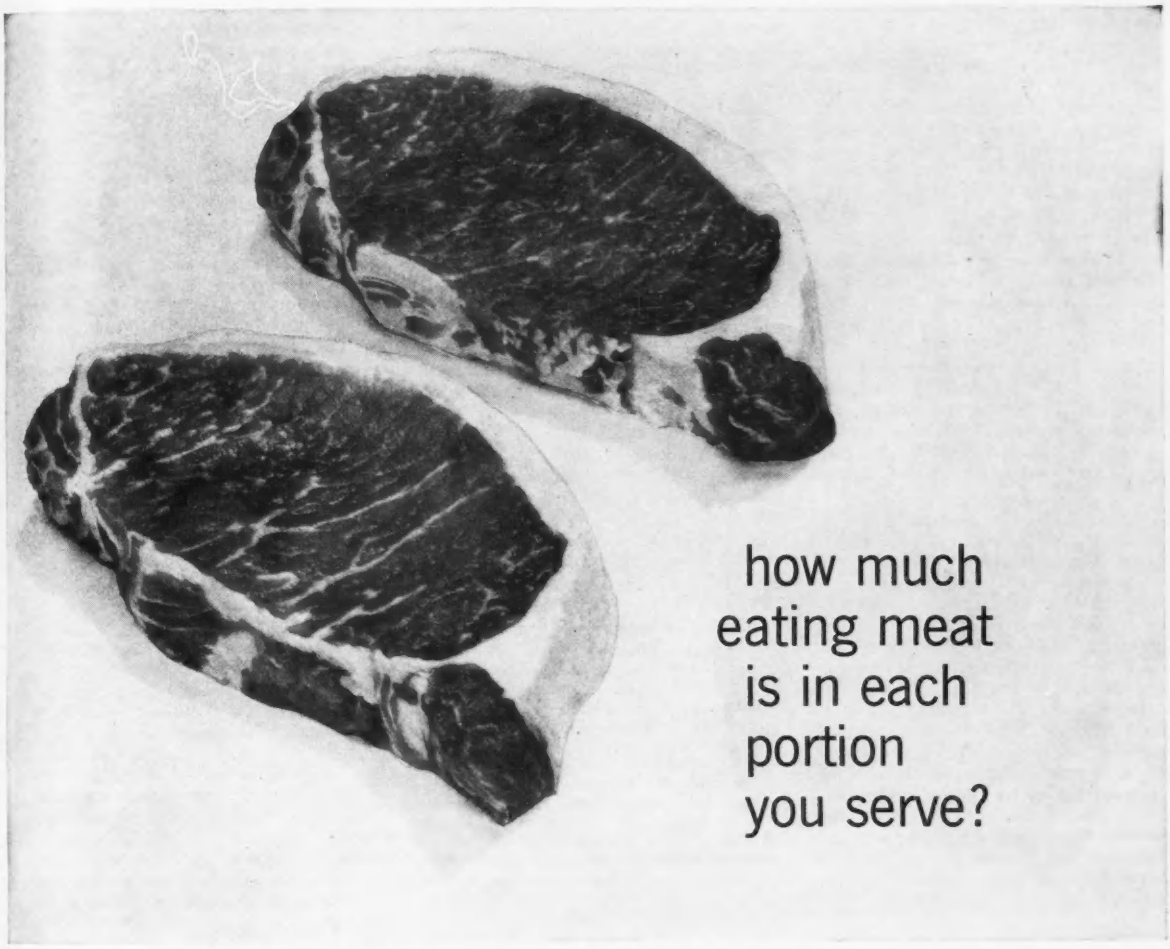
*Practical dietary management of patients with the celiac syndrome. E. M. Mike.—p. 463.

Relationships Between Pteridines and Other Heterocycles. This article deals with the relationships between pteridines and other heterocycles, such as purines, riboflavin, and vitamin B_{12}. This discussion deals primarily with reaction schemes derived from experiments done in laboratories with protozoa. Synthesis of crithidia factor from folic acid, direct synthesis of crithidia factor, and functions of pteridine in crithidia fasciculata are some of the topics presented.

Folic Acid Metabolites in Megaloblastic Anemias. Megaloblastic anemia in man may result from a deficiency of either vitamin B_{12} or folic acid. Since folic acid and vitamin B_{12} appear to have overlapping, parallel, or reciprocal functions, an investigation of the effects of the folic acid metabolites in the megaloblastic anemias was begun. Folic acid functions as a co-enzyme in the biosynthesis of serine, histidine, and methionine, the purine ring, and thymine. The major clinical manifestations of folic acid deficiency is megaloblastic anemia, presumably due to a lack of these "essential" metabolites. The hematopoietic effect of folic acid metabolites, when administered singly and in combination to patients with megaloblastic anemia, was studied. Significant but usually suboptimal responses have been obtained so far with serine, histidine, inosine, and thymidine.

Excretion of Formiminoglutamic Acid. Folic acid deficiency results in inability to degrade a formiminoglutamic acid (FIGLU) to glutamic acid, so that FIGLU accumulates in excessive amounts and is excreted in the urine. The assay techniques developed for detection of FIGLU are described and evaluated. Increased urinary FIGLU following an oral histidine monohydrochloride metabolic load is a biochemical index of folic acid deficiency. It is proposed as a new test to differentiate clinical folic acid deficiency from that due to deficiency of vitamin B_{12}, such as Addisonian pernicious anemia.

Serum Cholesterol Response to Arachidonic Acid. In a rigidly controlled experiment, six middle-aged men ingested capsules containing 4 to 5 gm. arachidonic acid a day or, during control periods, of oleic acid. Three others ingested only oleic acid capsules. The concentration of total cholesterol in the blood stream showed no significant change during the first few days of supplementation with



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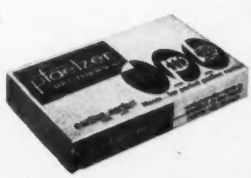

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arachidonic acid, but thereafter it tended to rise and remained elevated for several weeks following the withdrawal of the supplement before returning to approximately the pre-supplement level. The changes in the serum total cholesterol concentration were accounted for by changes in the cholesterol in the beta-lipoprotein fraction of the serum.

The Anti-Coronary Club. This study demonstrates that serum cholesterol can be significantly lowered, although not necessarily optimally, by adherence to a diet containing 9 to 11 per cent of total calories as polyunsaturated fatty acids with the saturated fatty acid component comprising 7 to 8 per cent of total calories. The "prudent diet" is described in detail and considered practical in that it can be followed by the majority of sufficiently motivated subjects for at least six months.

Diet and the Celiac Syndrome. The two most important conditions in the celiac syndrome include idiopathic celiac disease and cystic fibrosis of the pancreas. The basic principles of dietary management for both diseases, as used in Babies Hospital, New York, are described in table form. The general discussion includes dietary patterns followed during the course of the diseases and dietary guides planned according to age, clinical status, and pathologic conditions. Suggested meal plans and food guides are included for the various age groups. A low-gluten diet is detailed. Emphasis is on practical guides, and this article is recommended reading for everyone in pediatric work.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 49, August, 1959

*The 1958 revision of Recommended Dietary Allowances. R. E. Shank.—p. 1001.

*The uses of Recommended Dietary Allowances in military nutrition. T. E. Friedemann, H. F. Kraybill, and C. F. Consolazio.—p. 1006.

*The uses of the Recommended Dietary Allowances by the food industry. H. E. O. Heineman and E. Bennett.—p. 1013.

Revised Recommended Dietary Allowances. The 1958 revision of the Recommended Dietary Allowances is the fourth since the original presentation as a national food standard in 1943. Initially the allowances were developed to meet the imminent needs of war. In this article, Dr. Shank presents the nature of the changes and discusses their implications. Some of the changes discussed are the "reference" individual, caloric allowances for persons of varied size and age, adaptations to climate, protein allowances, calcium allowances, iron allowances, and niacin equivalent.

Allowances and Military Nutrition. The Army Master Menu, basic dietary standards for soldiers, and their relation to the Recommended Dietary Allowances are presented. The feeding of U.S. Army personnel is planned in accordance with minimal dietary standards based on the Recommended Dietary Allowances, as modified by the special requirements of troops under various operational conditions. The Army basic dietary standards are presented and compared with the nutrients of the Master Menu. All nutrients were well above the recommended minimal intake.

Recommended Allowances and the Food Industry. These authors believe that the Recommended Dietary Allowances are a useful "guideline" for the food industry. Setting nutrient goals for individuals, they have helped to enlarge the horizons of many of the members of the food industry. The attempt to reach and to maintain high standards of nutrition is vital to the food industry. The allowances have been used as a determinant in establishing levels for fortification and enrichment. As the Allowances emanate from an unbiased group of scientists, they can be looked upon as a carefully controlled compilation constantly reviewed in the light of new research.

FOOD TECHNOLOGY

Vol. 13, August, 1959

*Potential pathways in nutritional progress. S. Lepkovsky.—p. 421.

*Debittering of grapefruit products with naringinase. F. P. Griffiths and B. J. Lime.—p. 430.

*Curing of ham: A study of sodium chloride accumulation. 1. Methods, effect of temperature, cations, muscles and solution concentration. H. E. Wistreich, R. E. Morse, and L. J. Kenyon.—p. 441.

*Freestone peaches. 1. Effect of sucrose, citric acid and corn syrup on consumer acceptance. R. M. Pangborn, S. Leonard, M. Simone, and B. S. Luh.—p. 444.

*Factors influencing the quality of sliced, precooked frozen sweet potatoes. M. W. Hoover and D. T. Pope.—p. 448.

*Visual and eating preferences of consumer household panel for beef from Brahman-Hereford crossbreds and from Herefords. M. Dunsing.—p. 451.

*Use of potassium and sodium sorbate in extending shelf-life of smoked fish. J. J. Geminder.—p. 459.

*Subtilin and nisin as additives that lower the heat-process requirements of canned foods. L. L. Campbell, E. E. Sniff, and R. T. O'Brien.—p. 462.

*A comparison of student preference panels with a household consumer panel. L. D. Calvin and L. A. Sather.—p. 469.

Pathways in Nutritional Progress. The author recounts some of the advances in nutrition during the war, discusses the influence on nutrition of sensory stimuli (including sight and hearing), the impact of the central nervous system on nutrition (hunger, satiety), and emphasizes the importance in the future to the food industries of a more complete understanding of the role of sensory stimuli (for example, flavors and odors) in relation to eating. Extension of our present knowledge of neurophysiology and biochemistry is urgently needed.

Debittering of Grapefruit Products. This study reports on conditions affecting the use of naringinase in debittering grapefruit pulp and products. Conditions of optimum enzymatic hydrolysis of naringin in grapefruit pulp and juice to less bitter substances, prunin and naringenin, are 50°C., pH 3.1, enzyme concentrations of 0.05 to 1 per cent, and incubation periods of 1 to 4 hr. Enzyme action at 4°C. for 44 hr. hydrolysed naringin to less bitter prunin without a corresponding decrease in Davis test value. Enzymatic hydrolysis of colored grapefruit pulp (0.025 per cent enzyme, 50°C., 1½ hr.) reduced bitterness and enabled the pulp to be used for color fortification of poorly colored, late season juice. Prior inactivation of pectinesterase naturally present in juice before naringinase treatment was necessary to retain natural cloud.

Salt Accumulation During Ham Curing. Sodium chloride was allowed to diffuse from water solution into pork thigh muscles. The effect of different factors on the accumulation of sodium chloride in muscles was studied. The amount of sodium chloride diffused into the muscle through 1 sq. cm. contact area was called accumulation value. Accumulation values, expressed in milligrams per square centimeter, were determined over a 24-hr. period. The accumulation value did not vary significantly between different muscles. The addition of sodium nitrite to the solution seemed to increase the accumulation of sodium chloride, which also increased with temperature in a non-linear manner. Resistances to diffusion of sodium chloride into pork muscle were not specific to sodium ion. The accumulation value increased directly with the concentration of sodium chloride in solution.

Consumer Acceptance of Freestone Peaches. The type and concentration of sweetener used in canned fruit not only influences flavor but also texture and sometimes color. Granulated and liquid sugars of various types, compositions, and combinations are used by the canning industry. Replacement of part of the sucrose by corn sirup solids is now customary with some canners. Freestone peaches, varying in sucrose content (18.46 to 31.40° cut-out Brix), acidity (0.3 or 0.4 per cent), or sucrose replacement with corn sirup at levels of 20, 30, 40, 50, or 60 per cent were evaluated, by 3043 consumers for flavor and texture. Optimum sweetness in the all-sucrose pack was approximately 22.5° Brix. Acidification did not improve flavor. Texture preferences resembled flavor preferences. At an in-going sirup of 40° Brix, the all-sucrose control was preferred to the corn-sirup-containing samples. However, at 50° Brix, the samples received equal acceptance. The trained laboratory tasters indicated a significant decrease in fruit flavor and an increase in off-flavor with increasing replacement by corn sirup at the 40° Brix level. Excessive sweetness in the 50° Brix series masked flavor differences at the lower replacement levels. In general, firmness of the

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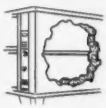

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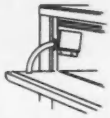

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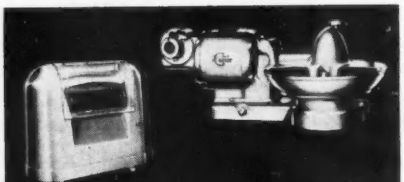

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fruit increased with increasing corn sirup content.

Sliced, Precooked Frozen Sweet Potatoes. Freezing larger sizes of sweet potatoes appears promising. This study was made to determine which varieties grown in North Carolina were best suited for this purpose, whether they should be cured or uncured, and to develop a processing technique. High quality frozen sweet potatoes were produced from N. C. 171, Georgia Red, Goldrush, Kandee, and Allgold varieties. Frozen samples produced from Puerto Rico and Carogold varieties were fairly good; however, those from Earlyport, Arcadian, Redgold, and Nemagold varieties were rated poor. Best results were obtained when the potatoes were sliced longitudinally and cooked in 45 to 60 per cent sucrose sirup. There was little difference in the quality produced from cured and uncured roots.

Preferences for Beef. This investigation was conducted to study visual and eating preferences for paired steaks from animals of different breed. Ability of panel members to select visually the steak which provided greater eating satisfaction is reported. The degree to which marbling, color, taste, tenderness, and juiciness affect taste ratings was also studied. Preferences of the panel were significantly related to both breed and grade. With animals of identical grade and different breed, Brahman-Hereford steaks were preferred. Preferences were much more pronounced for steaks from the sirloin than from the short loin cut. In the case of different grades, for steaks of Herefords grading higher than those of Brahman-Herefords, eating preferences favored the Hereford steaks and were much more pronounced for steaks from the short loin than from the sirloin cut. Visual preferences, however, appeared to be related to sex of animal. Brahman-Hereford steaks from steers were chosen; for Hereford steaks, the heifers. Marbling and/or color evaluations were the same as the over-all quality evaluation, indicating a visual preference for either the crossbred or Hereford groups. Two-fifths or more of the panel indicated different visual and eating preferences; thus either the visual characteristics of marbling and color are inadequate to indicate desirable eating qualities or the panel when selecting steaks are unable to judge the extent to which these characteristics were present. In addition, panelists having a visual preference for the crossbreed changed their eating preference almost as frequently as did those having a visual preference for the Herefords, indicating considerable diversity in their visual and eating preferences. More than nine-tenths of the panel members had identical preference for the over-all eating quality and for one or more of the specific eating factors. Variability in responses, however, was greater for the specific factors of taste, tenderness,

and juiciness than for the over-all eating quality.

Extending Shelf-Life of Smoked Fish. Fish products, because of their susceptibility to bacterial, yeast, and mold growth, have a short shelf-life. Dried, salted, or smoked fish, because of their low moisture content, are relatively free from bacterial growth. However, they are susceptible to mold and yeast growth. Potassium or sodium sorbate solutions can be applied before smoking as a spray or dip (or after smoking as a dip) to fish, resulting in levels of 0.03 to 0.05 per cent sorbic acid based on fish weight. High smoking heats in a non-vented smokehouse did not alter the antimycotic level of the fish. These levels were effective in extending the refrigerated shelf-like of non-vacuum-packaged smoked fish. Normal handling of vacuum-packaged smoked fish frequently results in pouch punctures from sharp fish fins, which provide a point of contamination by yeast and mold spores. Potassium or sodium sorbate solutions sprayed after smoking produced levels of 0.05 to 0.15 per cent sorbic acid based on the fish weight and inhibited growth of these contaminants. Refrigerated shelf-life of fish in punctured pouches was extended. Solutions containing a mixture of sodium sorbate and sodium isoascorbate inhibited yeast and mold growth and enhanced and stabilized the desirable pink-red color of smoked salmon. Solutions can be applied before or after smoking.

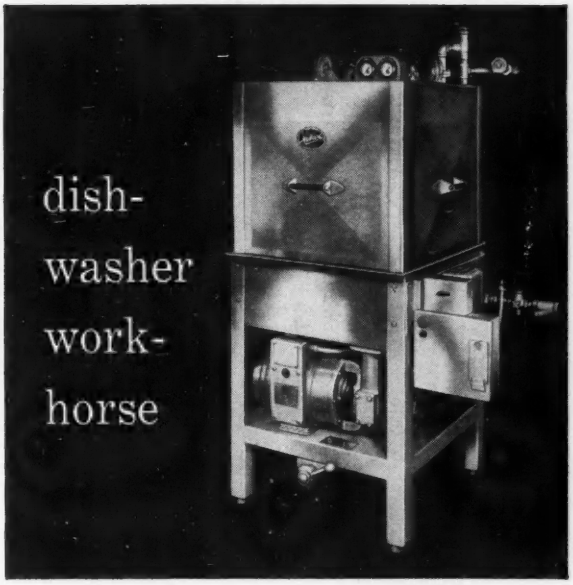
Antibiotics Lower Heat Requirements in Canning. Subtilin and nisin offer possibilities in aiding in the control of spoilage of a variety of canned foods. The present U.S. Food and Drug standards, however, do not permit the use of subtilin or nisin as additives in canned foods. This paper reports a study of the effect of subtilin and nisin on the severity of heat treatments needed to prevent spoilage of various canned food products inoculated with spores of highly heat-resistant food spoilage bacteria. Subtilin and nisin effectively reduced the thermal process requirements needed to control the spoilage of pea purée, cauliflower purée, whole kernel corn, cream-style corn, and tomato juice.

Student Preference Panel vs. a Household Consumer Panel. Paired samples of fifteen food products were judged for preference by a student panel of 120 to 185 students and a home panel of 220 families. The agreement between the student and home panels was very good, indicating that student panels can be used as a measure of home consumer preferences. Mean hedonic score and percentage preference for both student and home panels were highly correlated.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 170, August 8, 1959

*Incidence of cholecystitis and other diseases among Pima Indians of southern Arizona. F. G. Hesse.—p. 1789.



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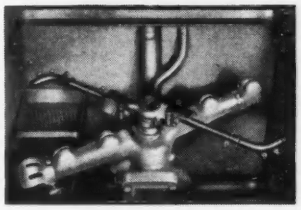

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*Sodium in instant coffee. Questions and Answers.—p. 1882.

Vol. 170, August 15, 1959

*Program of the Columbia University Institute of Nutrition Sciences. Council on Foods and Nutrition. W. H. Sebrell, Jr.—p. 1928.

*Infantile scurvy. Foreign Letters–India. —p. 2006.

Vol. 170, August 22, 1959

*Problem of antibiotics in foods. Council on Foods and Nutrition. H. Welch. — p. 2093.

*Weight gain after cessation of smoking. Questions and Answers.—p. 2148.

Vol. 170, August 29, 1959

*Symposium on significance of lowered cholesterol levels. Council on Foods and Nutrition. E. H. Ahrens, Jr., J. Hirsch, M. L. Peterson, W. Stoffel, and J. W. Farquhar.—p. 2198.

Diseases Among Pima Indians in Arizona. A study of the incidence of gallbladder disease, arteriosclerotic heart disease, and peptic ulcer among the Pima Indians of southern Arizona was made. Because the Pima is one of the few tribes that has completely accepted modern medicine, the statistical evaluation is, therefore, reasonably valid. The high incidence of gallbladder disease and the low incidence of arteriosclerotic heart disease and peptic ulcer among these people is difficult to explain on the basis of the currently suspected etiology of these diseases. A dietary study of Pima Indians showed their basic food to consist of beans, tortillas, and coffee, with hot chili peppers a common side dish. Meat and vegetables are usually eaten about once a week. Most foods are fried in lard. It is conceivable that the quantities of fried and spicy foods eaten regularly may aggravate existing cholecystitis. The low incidence of coronary disease among these Indians, in view of the relatively low-fat diet, is consistent with the findings of Keys in other population groups where a low-fat intake was proportional to a low incidence of degenerative heart disease. The rare peptic ulcer may be due to the relatively low stress and noncompetitive nature of Indian communal life.

Sodium in Instant Coffee. According to the Food and Nutrition Board, instant coffees have an average sodium content of about 84 mg. per 100 gm. of the dry product. A cup of coffee made from such products would contain about 4 mg. sodium.

Columbia University Institute of Nutrition Sciences. The Institute for Nutrition Sciences at Columbia University has been developed to train those interested in the field of international nutrition. Dr. Charles Glen King was the Institute's Acting Director until last year. Dr. W. Henry Sebrell, Jr., was selected as Director of the Institute, and in this article he discusses the function and program of the Institute. Although primarily a graduate teaching institute, the Institute will conduct a broad research program. Since the program is oriented toward public health, it is placed administratively in the School

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Infantile Scurvy. Although children of parents in a low-income group in India live on cereals and insignificant amounts of milk with hardly any supplement of fresh fruits or vegetables, frank scurvy is not as common as would be expected. In a study of twenty-five patients aged seven months to five years who had frank scurvy, poor diets were found. Treatment consisted of 250 mg. ascorbic acid given twice daily intramuscularly and 60 to 120 cc. fresh orange juice. Results were good in all patients except one who expired with hepatic failure and jaundice. Improvement in the others was noted three to eight days after treatment.

Antibiotics in Foods. In the U.S., antibiotics are probably our most important and widely used therapeutic agents. The extension of their uses to fields other than human disease has magnified the problems of the physician from the standpoint of side-reactions that may occur. Antibiotics are present now in many foods, both directly and indirectly, as they are used in animal feeds, crop sprays, and as food preservatives. A problem has arisen from the indirect antibiotic adulteration of milk from cows treated for mastitis. The Food and Drug Administration and other agencies have taken steps to alleviate the problem of penicillin-contaminated milk. However, it has not been solved completely.

Weight Gain after Cessation of Smoking. The question is asked as to whether ingested calories are absorbed from the intestine at the same rate whether one smokes or not. There is no known reference to any alteration of absorption effected by smoking and/or nicotine.

Lowered Cholesterol Levels. The significance of lowered blood cholesterol levels in the prevention and treatment of heart disease is not definitely known according to the Council on Foods and Nutrition, American Medical Association. To keep physicians informed, five papers are presented by foremost researchers. Various aspects of cholesterol levels are discussed. It is felt that widespread, drastic revision of diets is unwarranted at present. Conditions for using polyunsaturated fatty acids are considered. It is concluded that drugs and diet are still in the experimental phase.

THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 21, July, 1959

*Current concepts of protein requirements. E. W. McHenry.—p. 131.

*Safari—smorgasbord to borscht. K. Wilson.—p. 136.

*Nutritional excess in infancy and childhood. W. A. Cochrane.—p. 139.

Feeding Canada's armed forces. E. E. S. Wright.—p. 143.

Current Concepts of Protein Requirements. Dr. McHenry considers the protein requirements issued by the Food and Agricultural Organization valuable and states that they should be studied by all interested in nutrition. He briefly summarizes these. Following these, the protein need of Canadian adults is 0.72 gm. per kilogram body weight per day rather than the standard of 1 gm. For infants up to one year, an intake of 2 gm. protein is satisfactory. During childhood it is assumed that protein need decreases gradually from the level of 2 gm. per kilogram. The FAO report recommends 0.8 gm. high-nutritive protein per kilogram for adolescents. Dr. McHenry feels when a mixed protein intake is used, the allowance should be at least 1 gm. per kilogram. During pregnancy, a previous concept has been to increase protein markedly. However, during pregnancy there is a metabolic change making available protein for the current needs. The FAO report states than an extra 10 gm. high-quality protein a day is sufficient and that women who normally consume liberal quantities of protein need not consume additional protein during pregnancy. A useful practical advice is that they consume 1 to 1½ pt. milk a day. During lactation, an extra 20 gm. high-nutritive protein or 1 pt. additional milk is recommended.

Safari. This article is the story of a trip taken by a home economics teacher in Vancouver to Sweden and the U.S.S.R. in the capacity of consulting dietitian to a hockey team. Her official job with the team was to be a liaison person to assist those in charge of feeding arrangements in both countries. In Sweden this was no problem, but in Moscow there was some difficulty in the types of food available. This is an enjoyable and informative article of the highlights of her trip.

Nutritional Excess in Infancy and Childhood. As yet there is no large body of evidence to suggest that overnutrition and overweight may be harmful to the child. Nevertheless, it is of importance to consider. Recent studies support the contention that the observed advancement in height and maturation is the result of increased food intake rather than some hypothetical glandular factor. The control of infections and the increased knowledge of nutritional requirements have resulted in a marked improvement in the health and growth of children. However, the present era is also conducive to overnutrition because of advertising and availability of foods. Therefore, optimal nutrition will remain a challenge, and concern will be with the stress of overnutrition rather than nutritional deficiency.

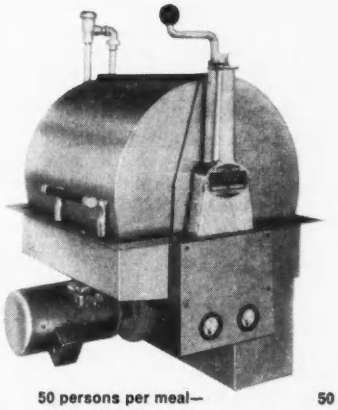
THE JOURNAL OF NUTRITION

Vol. 68, August, 1959

*Changes in hemoglobin, hematocrit and plasma protein in vitamin B6-deficient rats during pregnancy. R. L. Pike and M. L. Brown.—p. 551.

*Urinary excretion of amino acids by the same women during and after pregnancy.

If You Serve 50 to 200 Persons Per Meal...



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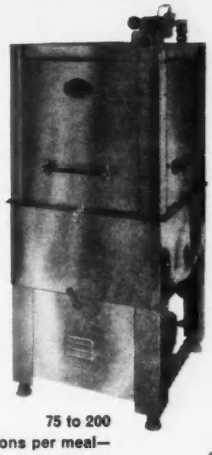

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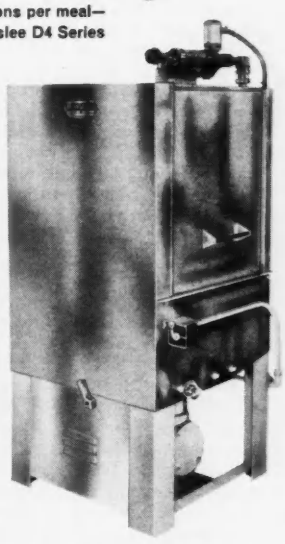

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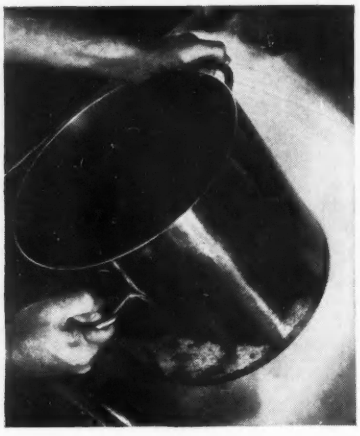

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A. W. Wertz, M. B. Derby, P. K. Ruttenberg, and G. P. French.—p. 583.

*Effect of potassium iodide and vitamin A on the thyroidal uptake and urinary excretion of I^{131} in goitrous subjects on the island of Krk. A. Horvat, V. Vidovic, P. Milutinovic, and R. Buzina.—p. 647.

Vitamin B_6 Deficiency and Pregnancy. Weekly changes in the concentration of total protein of the plasma, in hemoglobin, and in hematocrit were observed in control and vitamin B_6-deficient pregnant and non-pregnant rats. The interpretation of findings include the following. There is hemodilution in late pregnancy in animals receiving pyridoxine, but less change in blood volume in deoxypyridoxine-fed pregnant animals. This difference appears to be due to the counterbalancing influences of pregnancy and pyridoxine deficiency on blood volume. The tendency toward a reduction in blood volume in deoxypyridoxine-fed animals is indicated by the increase in the concentration of total protein in the plasma and by increased hematocrit. But, the hematocrit elevation is not sustained due to an apparent loss of ability to synthesize hemoglobin and blood cells. The effect of depletion on the concentration of hemoglobin and blood cells appears to be independent of fetal development.

Amino Acid Excretion in Pregnancy. Comparisons were made between the amounts of eight indispensable amino acids excreted by the same women during pregnancy and in the postpartum period. All the amino acids were excreted in higher amounts during pregnancy. The greatest average differences were found for threonine and tryptophan. With the exception of lysine, the maximum excretion of amino acids occurred in late pregnancy. The amount of amino acid excreted by an individual was not generally related to protein intake, weight, or age. The degree of stimulation varied for each amino acid.

Potassium Iodide, Vitamin A, and Goiter. The effect of iodine and vitamin A on the I^{131} thyroid uptake and urinary excretion among goitrous subjects from the island of Krk in the Adriatic was studied. The results do not support the suggestion that a low intake of vitamin A is a factor in the occurrence of goiter. However, the iodine supply does not differ in the various parts of the island, and the existence of some factors disturbing the iodine utilization is still suspected.

PUBLIC HEALTH REPORTS

Vol. 74, August, 1959

*Outbreak of gastroenteritis caused by *S. typhimurium* acquired from turkeys. D. C. Mackel, F. J. Payne, and C. I. Pirkle.—p. 746.

Gastroenteritis from Turkeys. Studdies were made of an outbreak of gastroenteritis involving about three hundred inmates of a penal institution. All had eaten roasted turkey which had been sliced on the same chopping block on which the uncooked fowl had been prepared. No one became ill after eating only reheated meat from the same birds. *Salmonella typhimurium* was recovered from persons who had eaten the meat and from turkey necks which had been frozen.

SCIENCE

Vol. 130, August 14, 1959

*Current problems in research. Domestication of food plants in the Old World. Joint efforts by botanists and archeologists illuminate the obscure history of plant domestication. H. Helback.—p. 365.

Domestication of Food Plants. Due to an increasing interest shared by both archeologists and biologists in each other's spheres of activity, considerable research is being done today on problems of the interdependence between man and nature in the more remote past. The two sciences have established a third, paleoethnobotany, which goes into the history of plants. In this article the domestication of plants in the Old World is considered with emphasis on wheats, barley, rye, oats, and others.

WHO CHRONICLE

Vol. 13, June, 1959

*Protein malnutrition in South India. WHO report.—p. 241.

Protein Malnutrition in South India. The World Health Organization placed a grant at the disposal of the Indian Council of Medical Research for study on protein malnutrition in South India. The project was carried out during the years 1955 to 1957, and some of the results are now presented. It was found that kwashiorkor accounted for 5 to 16 per cent of all admissions of children to hospitals and that this disease is a major pediatric problem in South India. Protein deficiency affected mainly the poorer sections of society, which have bad practices in infant feeding and weaning.

AMERICAN RESTAURANT

Vol. 43, August, 1959

*Right base and garnish essential to successful salads. T. Greer.—p. 89.

Salads. This is the third of four articles on creating a better salad department. The author comments that, "Salad bases are important factors to successful salad service, for the manner in which the base is constructed will not only give support to the salad, but it will create an artistic background for the arrangement." Different types of lettuce for bases, gelatin salads, unmolded salads, salad accompaniments, salad garnishes, and salad dressings are discussed.

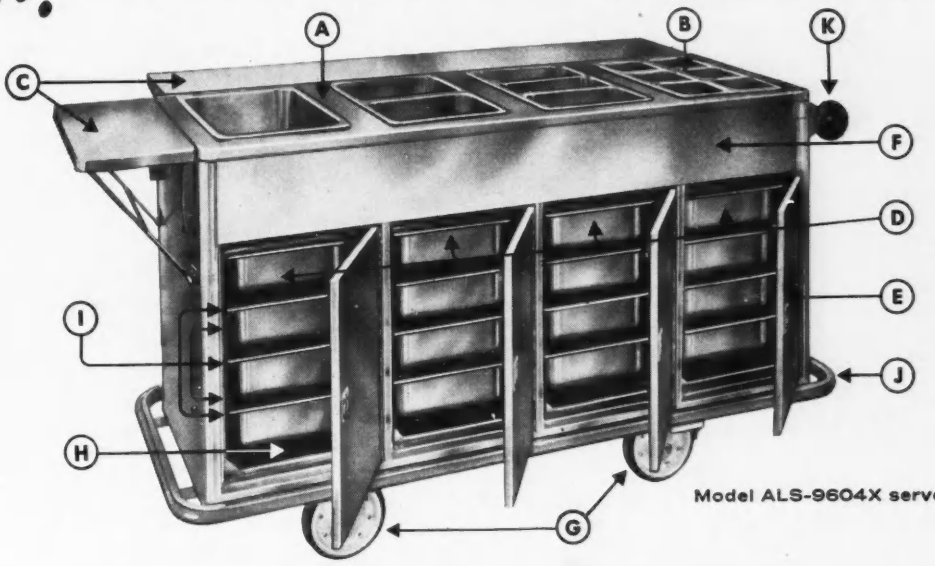
COLLEGE AND UNIVERSITY BUSINESS

Vol. 27, August, 1959

*Advance planning for food service. P. Fairbrook.—p. 48.

New Student Facilities. Northern Illinois University, DeKalb, completed

New! **Institutional Bulk Feeder Serves up to 300 Meals per Load!**



Model ALS-9604X serves 300

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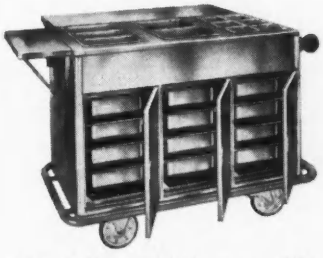

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A TOP DECK OF HEAVY GAUGE STAINLESS STEEL, one-piece *seamless construction* with all *edges rounded* and all interior corners of wells coved. Eliminates knife scraping. Smooth surfaces are easily cleaned.

B FLEXIBLE TOP DECK accepts full complement of square and rectangular, interchangeable insets, up to 6" deep*—lets you choose the top deck arrangement you need.

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a new residence hall for women in September. The author describes in detail the general layout of the new building, the recreational facilities, the cafeteria, and the kitchen layout and equipment.

DINER DRIVE-IN

Vol. 18, August, 1959

*Why do people eat out? D. E. Lundberg.—p. 33.

Eating-Out Study. Speaking on the subject of the drive-in trade, the author states, "One of the big problems is to identify one's market and be able to motivate that market to patronize the drive-in." A study was recently conducted to learn the main motivating factors behind the eating-out habits of the American people on every level. Dr. Lundberg discusses the results and applicability of this study.

FAST FOOD

Vol. 58, August, 1959

*Frozen means fast food. J. Ruffley.—p. 41.
*Frozen foods do's and don'ts.—p. 44.
*Here's why frozen foods pay off!—p. 52.

Frozen Food Developments. Tremendous advances have occurred in the frozen food field since the advent of "fast freezing" about twenty years ago. The author sketches some of the technical developments which were significant. "To many restaurant operators, the use of frozen foods and precooked frozen foods has been of debatable value. But, as the labor situation becomes more acute, the value of these items becomes apparent to an increasing number of operators." The author points out that food service establishments, in addition, are establishing a new market for refrigeration—especially holding cabinets for frozen foods. He discusses recent developments in the frozen food industry and possible avenues for future research.

Cool Advice for Cool Foods. The rules and regulations for the proper handling of frozen foods are presented cartoon-fashion. Receiving, storage, thawing, cooking, care of equipment, and on-premise freezing are some of the topics which receive animated attention.

The Pay-Off of Frozen Food. Representatives from three areas of the frozen food industry participate in this question-and-answer feature. Some of the questions are: Can you get a better price on certain frozen foods the year round? How can you keep costs down if you must buy more expensive top quality items? and How can the smallest operator take advantage of frozen foods?

FOOD SERVICE

Vol. 21, August, 1959

*Casseroles can make the difference. J. Chandler.—p. 35.

Hot Pots for All. Casserole service is ideal for "face-lifting" ordinary foods. A new glamor and life can be given to reused ingredients. "There is a casserole for every service need and each [is] full of food service drama for any menu, at any price . . . Interestingly enough, the menu term *en casserole* calls upon the customer's preconceived idea of *individual* service; something done with a little more *care* than usual; a food service of *amplitude;* a happy hope that it will have that *home-cooked* taste." A baker's dozen of thrifty casserole combinations are given, as well as an explanation of their thrift qualities.

HOSPITAL MANAGEMENT

Vol. 88, August, 1959

*Frozen factory-prepared menus. Part II. R. Gottlieb and M. K. Bloetjes.—p. 94.

Vol. 88, September, 1959

*Frozen factory-prepared menus. Part III. R. Gottlieb and M. K. Bloetjes.—p. 77.

Fresh and Frozen Menu Comparison. The purpose of a study was to show the influence of frozen, factory-prepared menu items on equipment, utensil, and layout needs of the institutional kitchen. A comparison was made of the number of pieces of equipment and utensils required, the frequency of their use, and the floor space needed for the equipment used in the preparation of sixteen fresh kitchen-prepared menu items and the same menu items purchased frozen factory-prepared. The authors list the following savings resulting from the use of frozen items: 64.7 per cent less pieces of equipment, 94.1 per cent less utensils, and 58.6 per cent less square footage of floor space required. A list of the sixteen menu items studied is given, and three layout plans of space needs are presented.

Frozen vs. Fresh Foods. This is the third and final part of a study showing the influence of frozen, factory-prepared menu items on equipment, utensil, and layout needs for institutional kitchens. The authors present comparison tables and lists of processes, equipment, and utensils compiled for this study. Recommendations for further study and suggestions for the application of the results are given. The study did not analyze the equipment needs in an auxiliary or nonproductive capacity or the effect of the frozen items on time, labor, and food costs.

HOSPITALS

Vol. 33, July 1, 1959

*Seven food service problems and their solutions. N. D. Robertson.—p. 89.

Vol. 33, August 1, 1959, Part I

*The golden touch—how to brighten hospital menus with canned peaches.—p. 86.

Vol. 33, August 16, 1959

*Good food—a public relations plus. E. E. Halleck.—p. 83.

Solutions for Hospital Problems. During 1957-59, the dietary operations of forty-two New Jersey hospitals were analyzed by the state hospital association's dietary consultant. In advising the administrators of hospitals of this service, they were requested to complete a questionnaire and to list the major needs of their dietary departments. The correlation between the needs listed and those found by the consultant were very close. The follow-

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H-9

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ing were the seven major problem areas encountered by the dietary consultant: (a) menu planning, (b) food purchasing and cost accounting, (c) standardized recipes, (d) preparation of food long before service, (e) job analyses and work schedules, (f) tray assembly, and (g) visiting of patients by the dietary department supervisor. The author reviews each problem individually and discusses the solutions suggested to the hospitals.

The Golden Touch of Peaches. Of all the fresh, canned, or frozen fruits available, peaches are one of the most versatile and adaptable for brightening a hospital menu. Peach salad combinations are legion, and imagination is the only boundary for the use of peaches in desserts or any section of the daily menu. Simplified and unified packs of canned cling peaches are available to the institutional market, and a chart is included which supplies information to simplify portion control.

Food-Induced Public Relations. The food served to a patient is an important factor in the everyday public relations program of a hospital. To be an effective public relations tool, however, it must be good food well prepared and attractively served. The author lists five basic steps involved in producing first-class food: (a) introduction to the patient, (b) selective menu cycle, (c) purchasing of good quality food, (d) careful preparation of all menu items, and (e) appearance and temperature of the food. The author elaborates on each of these steps as components of effective public relations.

INPLANT FOOD MANAGEMENT

Vol. 6, August, 1959

*Salads—get those summer sales before it's too late.—p. 27.

Salad Tricks. Consumption of the basic salad vegetables indicates that we as a nation are becoming more salad conscious every year. As an effective merchandising device, the article suggests featuring a "salad du jour," "salad of the day," or "Tuesday's special salad" which can turn a once-a-week salad eater into a more frequent customer. Chef-type salads make an excellent base for *salads du jour*. They can be given a new look by a simple variation in the featured ingredients without changing the basic greens mixture. Ideas for salads of various types, each designed to give a new look to more or less standard salad plates, and sample recipes for one week of *salads du jour* are given.

THE MODERN HOSPITAL

Vol. 93, August, 1959

*Patients thrive on epicurean food service. A. E. Hopper.—p. 110.

Gourmet Delights in a Hospital? "Patients can't go to a restaurant, so the restaurant should come to the patients," in the view of Mt. Sinai Hospital in Chicago. Selective menus that feature gourmet foods and instruction cards that explain dietary restrictions in a way that make such restrictions palatable have sharply reduced complaints about the food service. Even the modified diets are planned so that the patient has a wide selection of foods within his particular food allowances—an important psychological aspect. The standards of service, too, might compete with the finest restaurants. Besides the regular house menu which is shown in the article, the hospital also has selective menus for children and six selective menus for patients on modified diets. What does all this cost? Providing a wide selection of foods, even such exotic items as Rock Cornish hen stuffed with wild rice and trout amandine, has not increased food costs.

NRA NEWS

Vol. 2, August, 1959

*The value of cost accounting. W. F. Clark.—p. 8.

Advice on Cost Accounting. The author feels that such a vast and comprehensive subject as cost accounting might best be highlighted by a nonprofessional with a few salient points based on actual experience. This layman's approach to the intricacies of accounting would be especially applicable and helpful to newer operators. "The matter of adequate keeping of records is perhaps the most important, while at the same time it is perhaps the most neglected phase of restaurant management." The ins and outs of accounting procedures and many of the danger areas in faulty accounting methods are discussed.

RESTAURANT MANAGEMENT

Vol. 85, August, 1959

*Better handling lowers china cost.—p. 44.
*Cook it little—serve it hot.—p. 57.
*Breaded portions—by popular demand.—p. 62.

China Crash Tactics Ruin Profits. Extremely high figures for china replacement have induced some restaurant chains to follow a few simple "do" and "don't" rules to reduce breakage. By adopting the procedures listed, they have been able to lower china replacement costs to one-third of 1 per cent of annual intake instead of the 2.4 per cent found in a recent tableware survey.

Fish Secrets. "As every good chef knows, the secret of preparing any fish successfully is to cook it as little as possible." Two fish items found on almost any menu throughout the country are whole or filleted flounder and sole. Although they are frequently prepared in elaborate dishes, flounder and sole are most popular when simply sautéed or broiled with butter. The article presents several recipes for customer-pleasing fish items.

The Boon of Breaded Fish Portions. As recently as five years ago, almost all fish served by restaurants and other institutional users was in the form of fresh or frozen fillets; fish portions were virtually unknown. Fish seldom appeared on the menus of short-order and fast-food operations and was neglected by many restaurants and

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cafeterias. Developed since that time, ready-to-cook, frozen, breaded fish portions have made it possible for fast-food operations to serve seafood on a volume basis. Ready-to-cook breaded fish portions now comprise 50 to 60 per cent of the fish served today. "There is hardly a seafood item not available in portions." Year-round availability, exact portion and cost control, purchasing as a standard operation rather than an exacting art, and the absence of shrinkage, spoilage, or waste are some of the obvious advantages of breaded fish portions. The article contains a description of how a leading packer processes the fish and several menu suggestions.

VOLUME FEEDING MANAGEMENT

Vol. 13, August, 1959

*A new role for dietitians. B. Holes.—p. 34.
Testing for better buying. D. F. Divird.—p. 38.
*The standardized recipe/menu system works.—p. 46.

Commercial Hospital Dietitians. "The principles of food production and service, originally developed in commercial operations, are now being used to advantage in hospitals." The author comments that the trend in all food services is to *standardize* on the basis of scientifically proven procedures, and the dietitian is ideally suited for developing such programs. The theoretical training of the dietitian, however, often puts her at a disadvantage in the commercial volume feeding organization, and a dietitian cannot supervise a standardized system without first learning the system. A commercial volume feeding organization in California has developed a sixty-day training program which is specially constructed to teach the many dietitians which it employs the particular "formula system" used.

Standardized System. A West Coast volume feeding concern has learned that standardized recipes and menus insure the best possible results. "But the recipes might not produce adequate results if there were not rules for using them, plus supervision and instruction in handling them. The basic rule is that the recipes must be followed exactly, without any deviation in ingredients or procedures." An important factor in this system is that standard terms are used for ingredients and procedures on all recipe cards which are distributed to the individual units. It is pointed out that even by specifying procedures so exactly, the "art of cooking" is not destroyed. The exact technique is designated, but the skill of using the technique still belongs to the cook. The revision and clarification of recipes is handled through the head office, and the testing results are explained when the changed recipes are redistributed to each unit. One of the end-products of the standardized food formula system is the projected menu in addition to its function as a costing aid.

NUTRITION IN HEALTH AND DISEASE
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Cooper, Barber, Mitchell and Rynbergen. A major revision reflecting the rapid progress in nutrition, foods and diet therapy, and incorporating the newest research findings. Emphasizes the significance of good nutrition in health and disease, and the scientific and clinical adaptations which contribute to the educational background of the nurse. The presentation is simple, concise, authoritative and readily adaptable to correlated teaching patterns. Many illustrations, learning aids, study questions, charts and reference lists. 734 Pages, 143 Illustrations and 5 Color Plates. 1958. $6.00

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BASIC NUTRITION

McHenry. A modern approach to the college level nutrition course written by an authority with 30 years' experience in the nutrition field. Gives essential information on methods of nutritional investigation, energy requirements, composition of foods, the vitamins, special diets and their practical application. *More useful information is contained in this book than is generally found in similar textbooks for university or nursing students."—J.A.M.A.* 389 Pages, 9 Illustrations, 22 Tables. 1957 $5.00

PRACTICAL NUTRITION

Peyton. A complete nutritional guide for the practical nurse. Covers all aspects of normal nutrition, prenatal to old age; diet therapy, food economics, nutritive values, food preparation and many other topics. Many tables of great practical value. "... *one of the few current sources of information on basic nutrition which is readable, practical and sound."—Food and Nutrition News.* 379 Pages, 32-Page Supplement, 41 Illustrations. 1957 $4.00

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McCance & Widdowson. Describes the economic significance of white and brown breads and their place in history, and surveys experiments made to compare nutritional values of various types of bread. 174 Pages. 1956 $5.00

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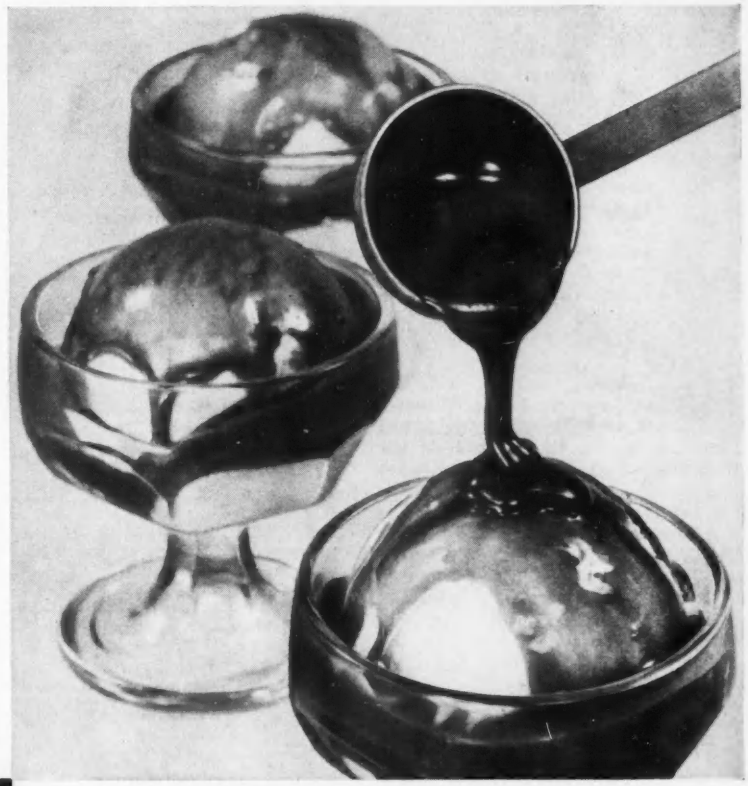

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Yield: 1 gallon or 125 servings of 2 Tablesp. (1-oz.)

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Follow recipe for Butterscotch Sauce, but after mixing pudding and syrup, blend in:

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Increase PET Milk to 2½ qts.

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To keep, cover and store in refrigerator.

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3rd International Congress of Dietetics. It is not too early to begin planning to attend the 3rd International Congress of Dietetics in London, July 10 to 14, 1961. The theme of the Congress will be: "Tradition, Science and Practice in Dietetics." The program will be divided into four main parts:

(a) Invited papers, relating to the general theme: historical aspects of food, the education and professional problems of dietitians, and the links between research and nutrition and its application.

(b) Discussion groups on subjects of current interest.

(c) A limited number of short, original communications on new therapeutic diets, the history of dietetics, nutrition education, and atherosclerosis.

(d) Visits to places of professional interest, including hospitals and school meal centers.

The languages will be English, French, and German, with publication in English and French. It is hoped that the papers to be read at the Congress will be printed in advance and that the proceedings will be available during the Congress.

Adelia M. Beeuwkes is representing The American Dietetic Association on the International Interim Committee of Dietitians, Chairman of which is Dorothy K. Hollingsworth of the United Kingdom.

Additional details about the Congress will be published in the JOURNAL as they become available.

Administration Institute. November 30 to December 4 will be the dates of an Institute on Dietary Department Administration in Portland, Oregon, conducted by the American Hospital Association in cooperation with A.D.A. Each session of the institute has been planned around a central theme, some of which are: "The Patient in Wonderland," "You Must Be a Communicative Leader," "Management," "The Team," "Operating a Dietary Department," and "Training." Further information may be obtained from the American Hospital Association, 840 Lake Shore Drive, Chicago, 11.

Food Service Supervisors' Course. Michigan State University will conduct its fifth annual ten-week course of training for hospital food service supervisors beginning January 18, 1960. The first nine weeks of the course will be held January 18 to March 18. A final-week seminar October 3 to 7, will serve to interpret the teaching of the first nine weeks and help students to resolve questions and share experiences acquired at their hospitals during the interim.

Employees who are enrolled in the course will receive instruction in management skills, basic principles in food production, menu planning, food purchasing, personnel relations and communication skills, nutrition and diet planning, sanitation, safety, supervision and training employees and cost control.

The course is co-sponsored by The American Dietetic and Hospital Associations and the state dietetic and hospital associations in Illinois, Indiana, Michigan, Ohio, and Wisconsin, and is conducted by the University's College of Home Economics. It is designed to: (a) assist hospitals in training dietary personnel who show potential for supervisory work (b) train non-professional personnel in supervision of food service, thus freeing dietitians for more important tasks, and (c) train the food service supervisor in hospitals without a dietitian in the latest methods for efficient and economical operation.

A brochure and application card may be obtained from Food Service Supervisor Training Program, Continuing Education Services, Kellogg Center, Michigan State University, East Lansing, Michigan.

The USDA has listed the following foods expected to be in plentiful supply during November:

Protein foods

Chickens—broilers and fryers
Pork
Turkeys

Other foods

Almonds
Apples
Cranberries
Filberts
Lard
Onions
Potatoes
Rice
Sweet potatoes

Frozen Foods for November. From the National Association of Frozen Food Packers come the following suggestions for foods that have appeal with special relation to Thanksgiving but which are also suitable for colder months:

Fruits and Juices

BOYSENBERRIES—a fruit becoming better known as a delicious pastry fruit; also excellent in tortes.

DESSERTS—new frozen cakes, including a banana cake and an orange cake, dark and light cream-filled cakes, pound cakes, and cheese cake, can add to dessert choices. Frozen fruit and custard-type pies are also popular. Especially for Thanksgiving, individual mince and pumpkin pies are suggested.

PEACHES — peach melba from fresh-tasting frozen peaches and raspberries has special appeal; use also with breakfast cereals.

ORANGE JUICE CONCENTRATE—so easy to serve because of labor-saving factors.

RASPBERRIES—a different fruit that adds a bright note to a fruit cup; use also in berry pies.

Vegetables

ASPARAGUS—use either spears, cuts, or tips to provide a summertime touch as winter sets in; include in casseroles.

BEANS, GREEN—three styles: whole, cut, or French cut; add to a stew for a gay surprise, in addition to serving as a separate vegetable.

BROCCOLI—comes prepared, ready to cook, with nothing to be discarded.

PEAS and PEAS AND CARROTS—may be used in various ways with casseroles, creamed dishes, and leftover turkey loaves to add both color and flavor.

POTATO PRODUCTS — both labor and shortening cost are reduced with frozen potato products.

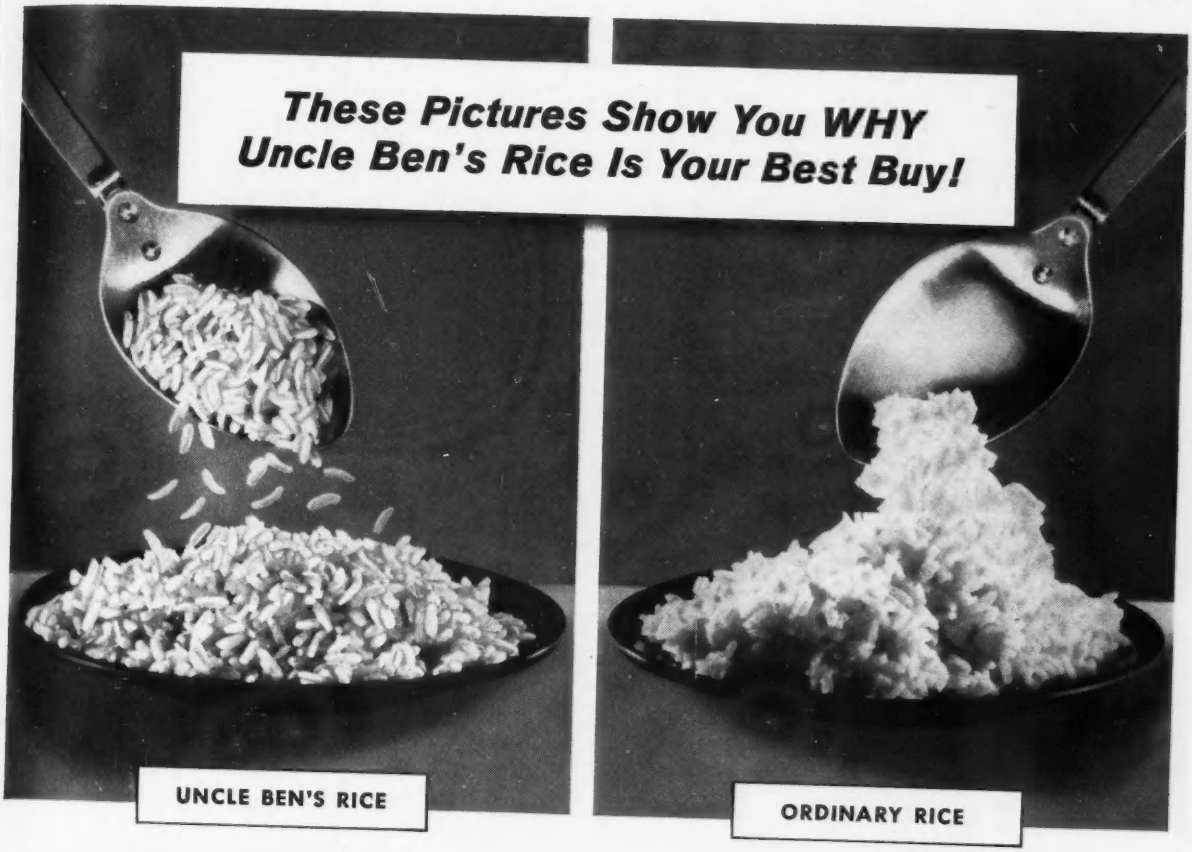
SPINACH—serve creamed and seasoned with nutmeg, Worcestershire sauce, celery salt, hot pepper sauce, garlic or onion powder. Various cheese sauces are delicious with spinach.

Twelfth Assembly of WHO. At the three-week Twelfth World Health Assembly held recently in Geneva, Switzerland, delegates from eighty-two of the ninety member and associate member states attended. The UN and specialized agencies, as well as non-governmental organizations interested in health matters, also sent observers. The Assembly adopted a work program for 1960 which will include expansion of work and research in the field of nutrition, as well as virus diseases and vital statistics. In the field of medical research, particular attention will be paid to the investigation of factors contributing to the incidence of heart disease and cancer.

It was resolved to postpone until next year the decision on a proposal that WHO organize an International Health and Medical Research Year.

October Symposia. On October 16 in New Orleans, a "Symposium on the Role of Vitamins and Other Nutrients in Lipid Metabolism" was co-sponsored by the School of Medicine, Tulane University, and The National Vitamin Foundation. All factors thought to be involved in the production or possible prevention of atherosclerosis were covered, including: fatty acids, cholesterol, vitamin B_6, niacin, and vitamin E.

A second symposium was also presented in October, this one at The Johns Hopkins Hospital, Baltimore. Its subject was prenatal nutrition, with discussion of such topics as: the role of maternal nutrition in the production of congenital malformations



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and reproductive failure; protein nutrition in pregnancy; metabolism of iron, vitamin B_{12}, and folic acid in pregnancy; and genetics and vitamin B_{12} deficiency. Ernestine Becker McCollum attended the symposium as A.D.A.'s representative.

Fellowships in Clinical Nutrition. In 1960, the Nutrition Foundation, Inc., in cooperation with the Council on Foods and Nutrition of the American Medical Association, will sponsor ten fellowships for research in clinical nutrition. The fellowships this year will be given in honor of Dr. Carl V. Moore, the 1959 recipient of the Joseph Goldberger Award in Clinical Nutrition. Each fellowship will provide $200 a month for three months and will go to a medical student, on recommendation of a senior investigator, with final selection by the Council. Applications must be received on or before December 15, 1959. The purpose of the fellowships is to stimulate staff members and students of schools of medicine to take a more active interest in the science of nutrition. Further information may be obtained from the Council on Foods and Nutrition, American Medical Association.

Specifications for Meat. Recently released by the USDA is a set of six booklets on the new USDA Institutional Meat Purchase Specifications. The first is a pamphlet on the general requirements for using the specifications in the "acceptance service" program of the USDA, while the other five present the specifications themselves for: fresh beef, fresh lamb and mutton, fresh veal and calf, fresh pork, and frozen pork. These new specifications for the first time consolidate and combine in one series the many specifications used by institutional purchasers of meat using the government's "acceptance" program for meat.

In the past, each institution using this service prepared and published its own specifications. Now, all institutions ordering meat under the acceptance program, will use the same standards in making up specifications.

Additional specifications are now being prepared for: cured pork, cured beef, sausage, edible by-products, canned meats, and portion control meats.

All six of the pamphlets may be ordered from the Government Printing Office, Washington 25, D.C. Those for fresh pork and fresh beef are 10 cents each; all others are 5 cents a copy.

WHO Booklet. A study group of the World Health Organization has reviewed present knowledge on iron deficiency and has outlined work that might be done to elucidate its incidence and etiology as well as recommending possible prophylactic measures. The results of this work have been published as No. 182 in the WHO Technical Report Series under the title, *Iron Deficiency Anaemia—Report of a Study Group.*

The report comments that there appears to be no appreciable deficiency of iron in most tropical diets, but that the diet consumed seems to result in decreased iron absorption. Other factors which upset iron balance are increased losses in perspiration and losses of blood caused by hookworm infection. From 1 to 2 mg. iron should be available to meet normal daily needs, the report recommends, and points out that an inadequate protein intake might also be associated with the production of this form of anemia. Increased iron intake through unfortified natural foods is desirable—foods such as vegetables and legumes. Enrichment of foods with iron when iron deficiency anemia is prevalent is also recommended.

Copies of this report may be ordered for 30 cents each from: International Documents Service, Columbia University Press, 2960 Broadway, New York 27.

Film on Personnel Relations. "Farewell to Birdie McKeever," a new 16 mm., black and white movie with sound, has been released by Stuart Reynolds Productions and is recommended as a new educational and training film providing a basis for discussion of: office practices and procedures, employee-employer relationships, and cross-cultural understanding.

End Mixing!
Save Time!
LSM
milk
with NEW
LOW SODIUM MILK
A Natural, Whole
LIQUID MILK
for low-salt diets
Pour LOW SODIUM MILK right from the can to patient's glass. Save time because there's no mixing. And each glass is assured the same natural consistency. LOW SODIUM MILK can be used whenever a sodium restricted diet is indicated.
Low Sodium Milk fortifies the nutritional value of any diet for it contains many of the proteins, vitamins and minerals so essential for good health and growth.
Each quart contains approximately 5% carbohydrates, 3.5% protein, 3.5% butterfat, 675 calories, AND LESS THAN 50MG. SODIUM.
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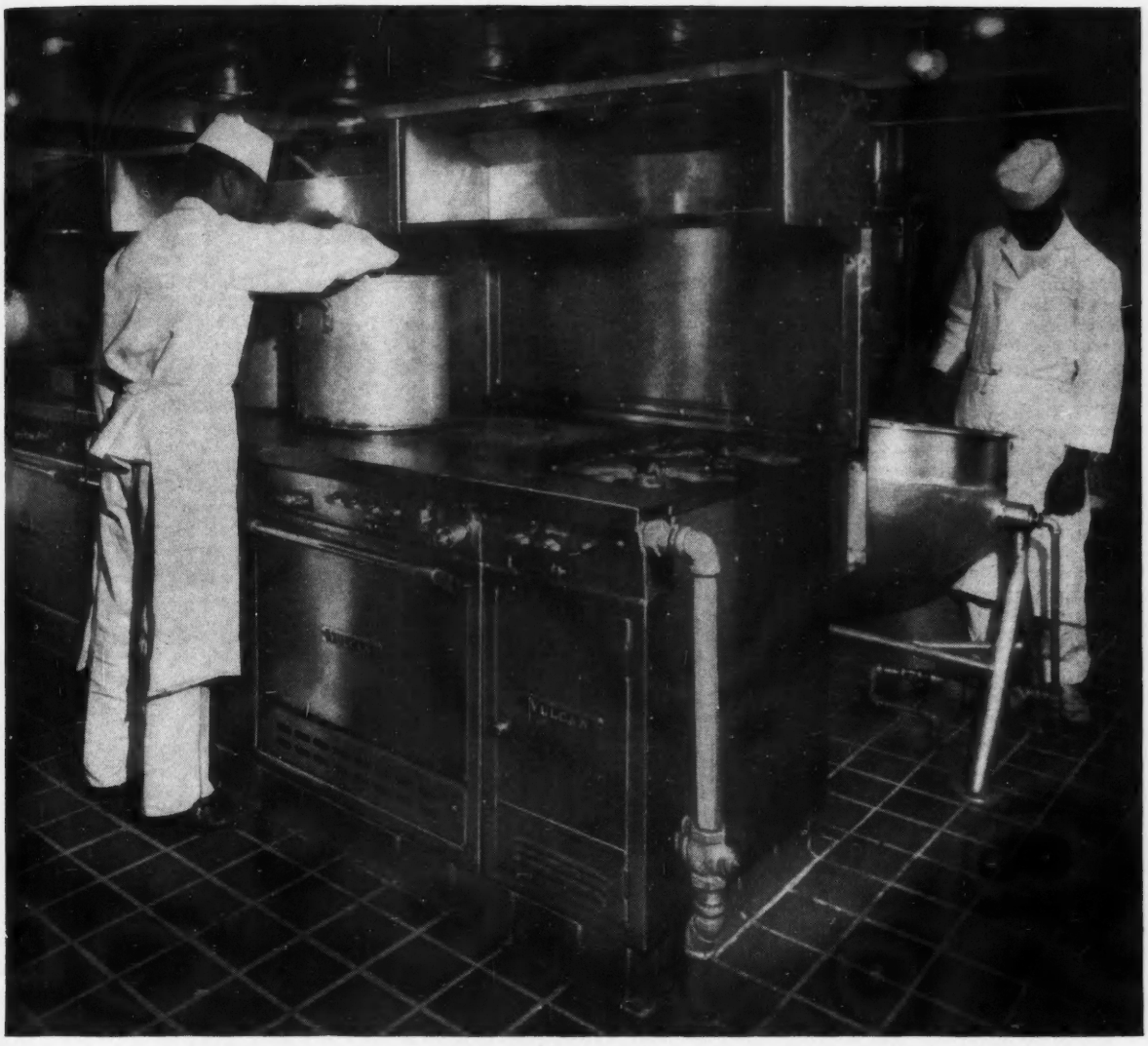

Chefs prepare food on modern Gas equipment in the kitchen of Roanoke Memorial Hospital

Enough fried chicken for 300 patients in 12 minutes . . . thanks to GAS

Modern stainless steel Gas equipment with automatic controls is the key to fast preparation of special and regular diet foods at Roanoke Memorial Hospital, Roanoke, Virginia.

Stainless steel pressure cookers and steam kettles can cook enough fried chicken in 12 minutes to serve 300 patients, after which chicken is browned in a Gas-fired deep fat fryer. Automatically controlled Vulcan Gas equipment—ranges, baking and warming ovens—speed nutritious, tasty food to patients and staff with no interruption in service for changeover to special diets.

For information on how Gas can help you modernize your food service, call your Gas Company's commercial specialist. He'll be glad to discuss with you the economies and outstanding results you get with Gas and modern Gas-fired equipment. *American Gas Association.*

The setting is an advertising agency, where Birdie McKeever is an unsatisfactory, but pleasant receptionist—so pleasant, in fact, that none of the partners can bring himself to discharge her. It develops that Birdie has never been hired by the firm, that she substituted for a friend for one day. When the friend did not return, Birdie carried on. In reviewing the film, Francis C. Byrnes, Associate Director of the National Project in Agricultural Communications, Michigan State University, points out that it provides the basis for discussion of the appropriateness of and what is involved in establishing and maintaining a permissive working atmosphere, how we arrive at expectations of others, and for ourselves. It can also stimulate questions about employment regulations and conditions, and in a more general way, some cross-cultural understanding, since stereotypes of people and behaviors can be compared. Although the action takes place in an advertising agency, the situations and problems presented are equally common to other types of employers, especially public and semi-public institutions where formal job descriptions and routine efficiency rating procedures often obstruct rather than facilitate employee-employer relationships. Discussion leaders' guides are available for use with the film.

The film, which runs 25 min., may be rented or purchased from: Stuart Reynolds Productions, 195 South Beverly Drive, Beverly Hills, California.

FDA Publications. A booklet to aid in the campaign to fight misrepresentation of foods, drugs, and cosmetics has been issued by the Food and Drug Administration under the title, *Read the Label.* In it are explained, with edifying illustrations, the labeling requirements for foods, drugs, devices, and cosmetics, over which the FDA has jurisdiction. The first half of this forty-page booklet is devoted to the problems of labeling of foods, while the last half deals with drugs, devices, and cosmetics. Copies may be ordered for 20 cents each from the Government Printing Office, Washington 25, D.C.

A second, more technical publication has been prepared jointly by the Food and Drug Administration and the U. S. Public Health Service on *Poultry Hygiene. Part 1. Examination and Evaluation of Poultry and Poultry Products.* In it are presented recommendations on ante-mortem and post-mortem inspection of poultry for wholesomeness and freedom from adulteration. Its purpose is to assure uniformity of administrative action by the several federal agencies having responsibility in this field. Modern concepts of meat hygiene and the principles of poultry inspection are discussed in an introductory section, which is followed by sections which list and describe various diseases of poultry and explain the significance of specific ante-mortem and post-mortem findings. A glossary is included. This is Public Health Service Publication No. 683 and Food and Drug Administration Technical Bulletin No. 2. It may be ordered from the Government Printing Office, Washington 25, D.C., for 40 cents a copy.

How-to-Write Booklet. *Writing and Publishing Your Technical Book* is the title of a free booklet offered by F. W. Dodge Corporation (119 West 40th Street, New York 18). It is written to help authors organize and develop their ideas for books to the point where they can obtain the support and backing of a publisher. Six chapters discuss the following subjects: reasons for writing a book, planning for success, choosing a publisher, the prospectus and outline, writing the specimen chapters, and acceptance and the contract. A number of checklists and point-by-point listings of things to remember in such a venture are presented to help the embryo writer on his way. A special feature is a discussion of the author's contract with the publisher in which the responsibilities of all parties are fully outlined.

Interns Graduate. On July 23, dietetic interns of *Henry Ford Hospital,* Detroit, were the guests at a graduation dinner in their honor. Dr. Michael Brennan, Chief, Oncology Division, spoke to the graduates. Pins, diplomas,

a margarine designed to aid in
lowering cholesterol

References: 1. Terman, L. A.: Dietary management of hypercholesterolemia, Geriatrics *14*:111 (Feb.) 1959. 2. Boyer, P. A.; Lowe, J. T.; Gardier, R. W., and Ralston, J. D.: Effect of a practical dietary regimen on serum cholesterol level, J.A.M.A. *170*:257 (May 16) 1959. 3. Vail, Gladys E.: Cooking with fats high in polyunsaturated fatty acids, J. Am. Dietet. A. *35*:119 (Feb.) 1959. Reprints available.

PITMAN-MOORE COMPANY
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a delicious spread

and school caps were presented by Margaret King, Director of Dietetics, to:

Kathleen Gerger, Seton Hill College
Jayne Edinger, Mary Manse College
Georgia Hilt, College of St. Teresa
Patricia Hoffman, Michigan State University
Margaret Langenberg, College of St. Teresa
Janet Lemery, University of Montana
Anna Mamiya, University of Hawaii
Shirley Peterson, North Dakota State College
Ann Tritt, University of Omaha
Lucy Wood, Muskingum College

Fourteen dietetic interns completed their year's work at the *Veterans Administration Hospital*, Houston, on August 28. They are:

Jane E. Brown, University of Nebraska
Larissa Carter, North Texas State College
Rosemary Dean, Russell Sage College
Dorothy Gall, University of Oklahoma
Julia Galloway, University of Arizona
Jo Ann Kidwell, Colorado State University
Ena Claire Landry, Southwestern Louisiana Institute
Joan Needham, Northwestern State College
Jan Parker, Oklahoma State University
Abigail Rosa, University of Puerto Rico
Emerita Santiago, University of Puerto Rico
Bernice Schein, Oklahoma State University
Sister Urbana, University of Houston
Elsie Weldon, Colorado State University

A third graduation of dietetic interns took place on September 18, at the *Walter Reed Army Medical Center*, Washington, when eleven second lieutenants in the Army Medical Specialist Corps received diplomas. The graduation address was made by Brig. Gen. C. F. St. John, Commanding General of Walter Reed. The following were members of the class:

Norma J. Bodie, Iowa State College
Florence A. Burgly, Pratt Institute
Christine S. Cardwell, Howard University
Joan Forester, Woman's College of the University of North Carolina
Dorothy M. Mount, Florida A. & M. University
Caroline W. Nizborski, College of St. Elizabeth
Maria J. O'Brien, Framingham State Teachers College
Marian V. Strzelec, Fontbonne College
Sarah K. Swift, Hood College
Patricia F. Tripp, University of Maine
Jane L. Welches, Fontbonne College

Graduation exercises on September 9 honored ten dietetic interns at *Freedmen's Hospital*, Washington, D.C. Following an address by Dr. J. Clinton Hoggard, Secretary-Treasurer, Department of Foreign Missions, AME Zion Church, certificates and A.D.A. pins were awarded to:

Margie L. Borum, Wayne State University
Hattie M. Byrd, Florida A. & M. University
Dolores B. Emmons, Morgan State College
Bettye Jean Epps, Prairie View A. & M. College
Mildred Brown Johnson, Morgan State College
Eloise H. Lipscomb, Howard University
Vivian A. Raines, Kentucky State College
Geraldine O. Redd, Morgan State College
Thelma E. Scoon, Hampton Institute
Gwendoline M. Stephenson, Howard University

News of State Associations

Alabama Dietetic Association. For the past three years, the Alabama Dietetic Association has provided dietitians to help staff the Seale Harris Diabetic Camp, held each year for two weeks in August at Citronelle. Some eighty-five campers, ranging in age from eight to fourteen, attend the camp. This year three members of the Alabama association served at the camp: Janie Wilson, Pauline Merriam, and Kathleen Stitt. Tody Shinkowa, from North Carolina, also served.

Clinical trials[1-2] demonstrate that Emdee Margarine, substituted for other spreads and shortenings in the daily diet, helps supply the linoleic acid needed to reduce cholesterol levels. Eighty per cent of Emdee Margarine's fat content is pure corn oil which is not hydrogenated but specially processed* to preserve its naturally high content of linoleic acid.

Patients whose intake of saturated fats must be restricted will find Emdee Margarine a welcome addition to their diets. Moreover, the appealing flavor, color and smooth texture of Emdee Margarine will appeal to the whole family—making preparation of separate meals for one member of the household unnecessary. *Available in 1 lb. can, at pharmacies only.*

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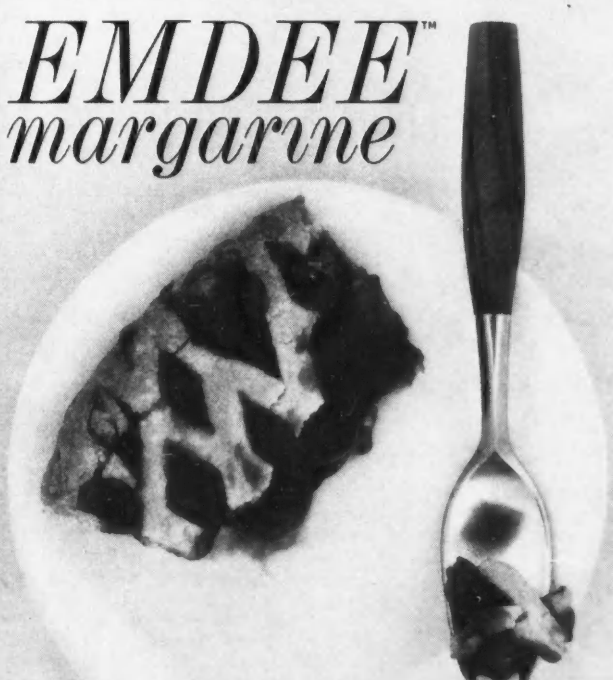

a superb shortening

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California Dietetic Association. A fall meeting in Yosemite National Park was enjoyed by the California Dietetic Association on October 2 and 3, when fall color was at its best. The program featured group discussions by the regional section and committee chairmen in an effort to make plans for the future.

The continuing education program of the *Los Angeles Region* this fall includes three courses offered through Business Administration Extension of the University of California at Los Angeles: "Elements of Personnel Management," "Management Practices in Hospital Administration," and "Applied Human Relations."

Hawaii Dietetic Association. August 20 to 22 were the dates of a Nutrition Institute co-sponsored by the Hawaii Dietetic Association, the University of Hawaii's College of Agriculture, and the Hawaii Department of Health. The program included:

"Summary of Nutritional Status, U.S.A."—Agnes Fay Morgan, Ph.D., University of California, Berkeley

"School Health Services Evaluation Project (1957-58)"—Katherine Edgar, M.D., Bureau of Maternal and Child Health, Hawaii Department of Health

"General Aspects of Health Education Techniques and Motivation"—Beryl Roberts, Dr.P.H., School of Public Health, University of California, Berkeley

"Cultural Patterns and Changing Food Habits"—a symposium with psychology, sociology, and anthropology represented

"Understanding Motivation–Ways to Improve Food Habits"—Beryl Roberts, Dr.P.H.

"Where Do We Stand in Local Teaching Techniques?"—small-group discussion

"Newer Knowledge of Nutrition–Inter-relationships of Vitamins and Hormones"—Agnes Fay Morgan, Ph D.

"Dietary Fat and Heart Disease"—Willis Gortner, Ph.D., Head, Chemistry Department, Pineapple Research Institute

"Research on Cholesterol Metabolism at the Hawaii Agricultural Experiment Station"—Lucile Adamson, Ph.D., Hawaii Agricultural Experiment Station, University of Hawaii

"Hypertension"—Richard Horio, M.D., internist

"Diabetes"—Norman Sloan, M.D., Chief, Bureau of Adult Health, Hawaii Department of Health

"Space Nutrition"—Col. Hubert Miller, USAF, Senior Flight Surgeon and Director of Professional Services, Hickam Air Force Base.

Kansas Dietetic Association. October 2 and 3 were the dates of the fall meeting of the Kansas Dietetic Association at Lawrence. The program included:

"Man's Food and His Faith"—discussion of dietary regulations in major religious faiths by a panel

"Communications with a Personal Touch"—Helen Sims, Director of Public Relations, Station KUMC

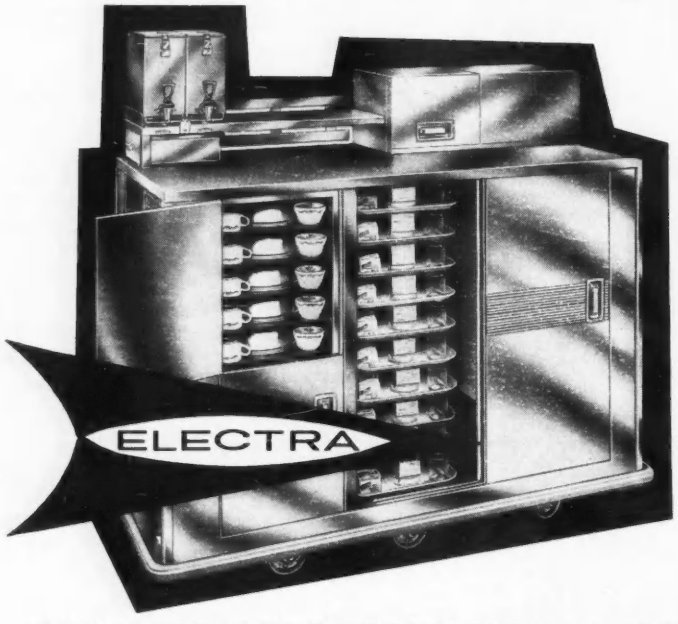
"Experimental Studies in Choline Deficiency"—Dwight J. Mulford, Department of Biochemistry, Kansas University

"Potentialities of Food Preservation by Radiation"—Frank Hoecker, Department of Physics, Kansas University

In *Wichita*, a new course for hospital food service supervisors is being co-sponsored by the local dietetic association, the Wichita Public Schools, and the Kansas Board of Vocational Education. Evening classes will be held in a Wichita school for the first six months of the course, followed by three months of practical experience and advanced classes in local participating hospitals. The course is open to high school graduates, eighteen years of age or older. It is planned to include training in hospital organization and ethics; normal and therapeutic nutrition; principles of food administration; good housekeeping, sanitation, and safety; and supervisory and job training. Students completing the course will receive certificates.

Louisiana Dietetic Association. September 27 to October 3 was celebrated as Louisiana Dietetics Week by proc-

THE ALL NEW *Meals-on-Wheels System*



WITH MORE PLUS FEATURES THAN ALL OTHERS

No other mobile food service offers you so many advantages including:

- MATCH-A-TRAY—abolishes mistakes in loading and delivering patient trays.
- Heavy duty ¼ H.P. compressor.
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Meals-on-Wheels System

The all new 6-page descriptive catalog is just off the press—order your copy now.

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Please send me your all new 1960 Electra catalog.

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Address_____

Hospital_____

Title_____

History of The American Dietetic Association

1917-1959

Mary I. Barber, Editor

This is the first official history of the ADA from its inception in 1917 through 1959. More than being merely a record of the Association, its origin, structure, aims and accomplishments, this new book includes the many personalities that represent its leadership and explores the role of the dietitian from ancient times to the Space Age.

Chapter 1 considers the term "dietitian" historically, and presents a definition which describes the dietitian's responsibilities today. Chapter 2 outlines the history of dietetics from the ancient Ebers papyrus to the present, highlighting the achievements of great figures in the history of nutrition.

Chapter 3 gives an interesting account of the founding of the ADA. Chapters 4 through 7 record by decades the spectacular advances both of the ADA and of the science in general. Chapters 8 through 14 describe the structure of the Association, and the work of the various Committees and Sections devoted to education, community nutrition, diet therapy, etc.

Chapters 15 through 19 cover the history of dietitians in military and government service, the United States Children's Bureau and the role of the Journal of the ADA and the Association's Public Relations Department. Chapter 20 relates the challenging aspects of dietetics in the Space Age.

328 Pages • 50 Illustrations

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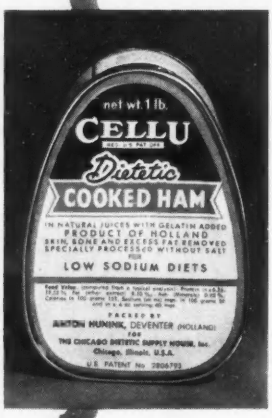
NEW menu
variety
to low sodium diets
with

CELLU
REG. U. S. PAT. OFF.
Dietetic Cooked Ham

CELLU DIETETIC FOODS ARE THE FINEST OF THEIR KIND. OVER 300 ITEMS AVAILABLE.



Ham, one of the most flavorful of all meats, is now available in natural juices especially processed without salt for low sodium diets. Skin, bone and excess fat have been removed in this imported 1 pound ham. Sodium value (as na) mgs. in 100 grams 50; 4 oz. serving 60 mgs. Recipes and suggestions for serving are on the tin.

SEND FOR YOUR COPY OF CELLU'S COMPLETE CATALOG OF LOW SODIUM ITEMS.

CHICAGO DIETETIC SUPPLY HOUSE, INC.
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PREFERS CRAMORES

Manager of private institution, Kentucky: "A truly fine quality product. We've used it for years in baking and cooking as well as drinks."

CRAMORES CRYSTALS
LEMON - ORANGE - LIME
- Ideal for institutional use
- Consistent, year 'round quality fruit flavor
- Economical—no spoilage—no squeezing
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- Requires no refrigeration

CRAMORES "DRI-SYRUP"
- Instantly soluble in cold water
- 2½ lb. bag makes 3 gallons of finished beverage
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Now Available! Cramores Instant Hot Chocolate Powder
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EATING IS FUN—
for
Older People, Too

Designed to Aid Proprietors of Small Nursing Homes and Residences. Also Adaptable to Home Kitchens

This attractive booklet is a guide to better food and food service in the small institution. Based on normal nutritional requirements for adults, the menu patterns, sample suppers, and pointers on meal planning have their place in any household. Practical ideas for making the work of the manager easier and pleasanter include a weekly marketing guide, hints for economy in buying and storage, and suggestions for serving.

This is a project of the Diet Therapy Section of The American Dietetic Association.

Single copy 50¢

Five copies ---------- $2.00
Ten copies ---------- 3.75

Order from:

THE AMERICAN DIETETIC ASSOCIATION
620 North Michigan Avenue
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lamation of the governor.

New Orleans was the scene of the annual convention of the Louisiana Dietetic Association, October 1 to 3. The program included:

"Food-Borne Infections"—Dr. V. W. Greene, Assistant Professor of Public Health, University of Minnesota

"Latest Aspects of Diet Therapy"—Doris Johnson, Ph.D., A.D.A. President and Association representative

"Strategy to Tempt the Taste"—Helen Corbitt, Nieman Marcus, Dallas

"Metabolic Studies of Pre-Adolescent Girls"—Dorothy Moschette, Professor of Nutrition, Louisiana State University, Baton Rouge

"Current Trends in European Hospitals"—Barbara Campbell, Lake Charles

The banquet honored the past-presidents of the Louisiana Association, all of whom were present and received tiny gold gavels.

Nebraska Dietetic Association. Officers for 1959-60 for the *Omaha-Council Bluffs Dietetic Association* are: Ardith Von Housen, Dairy Council of Omaha and Council Bluffs; Vice-President, Mary Thompson, Clarkson Hospital, Omaha; Treasurer, Jeannette Hanson, Immanuel Hospital, Omaha; and Secretary, Marian Cunningham, Nebraska Psychiatric Institute, Omaha.

Association Activities

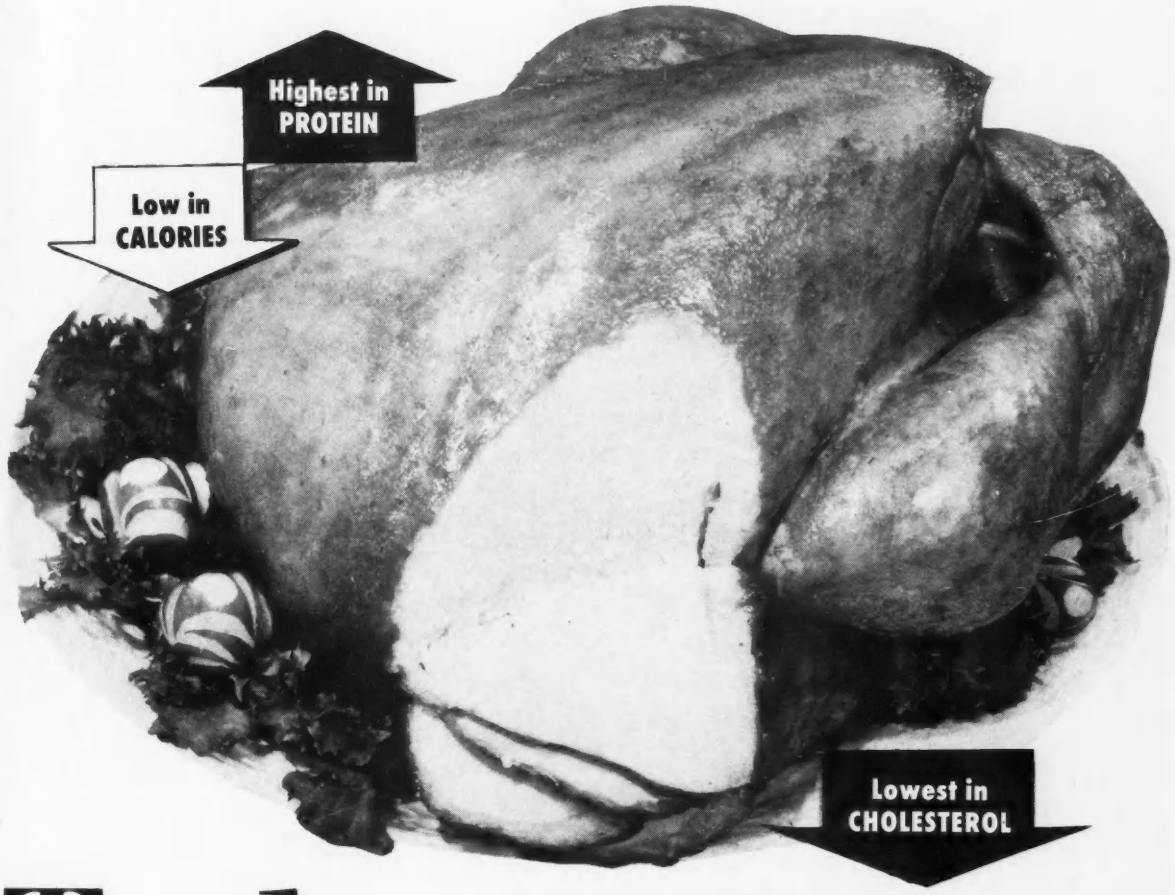
A.D.A. Representatives to State Meetings. Association representatives are attending the following state dietetic association meetings this fall:

September 25–26—Charlotte Young, Ph.D., *West Virginia*, Charleston
October 1–3—Doris Johnson, Ph.D., *Louisiana*, New Orleans
October 2–3—F. Eugenia Whitehead, D.Sc., *Kansas*, Lawrence
October 9–10—Gladys Everson, Ph.D., *Arizona*, Flagstaff
October 9–10—Dagmar Tuomin Walch, *South Dakota*, Brookings
October 16–17—LeVelle Wood, *Washington State*, Olympia
November 6–7—Margaret Ross, Ph.D., *South Carolina*, Columbia

Council on Youth Fitness. The House of Delegates of our Association on August 25, 1959, in Los Angeles passed the following resolution:

. . . Whereas the President of the United States has activated a Council on Youth Fitness among his Cabinet members and has appointed a Citizens' Advisory Committee on the Fitness of American Youth composed of representative American leaders including dietitians.

. . . Whereas the emphasis of the President's Council is on total fitness



Turkey

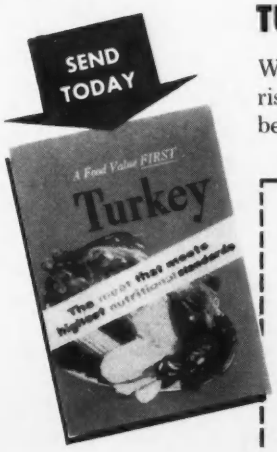
THE MEAT THAT MEETS HIGHEST NUTRITIONAL STANDARDS!

Turkey is in an enviable position in the dietetic field. A recent series of studies into the nutrient composition of turkey meat by one of America's leading universities has established it as a most nutritious, health-protecting meat. It is lowest in cholesterol of all popular meats. Its extremely low fat content is classified among the soft-type fats (unsaturated), the fats which apparently are beneficial in lowering the level of the blood cholesterol. It also was found to be highest of all red meats and poultry in protein content. In riboflavin and niacin, too, turkey meat ranks at the top of the list.

TURKEY IS ECONOMICAL, TOO!

With present red meat prices high – and still on the rise – turkey's moderate price makes it the season's best meat buy.

For the complete story of turkey and its food values, write for free booklet **"Turkey, the Meat That Meets Highest Nutritional Standards"** and reprint article **"Amino Acid Composition of Turkey Meat."** Send coupon for one or both.



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☐ Please send booklet "Turkey, the Meat That Meets Highest Nutritional Standards."
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Merry Christmas
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Christmas tray service takes on a new gaiety with Aatell & Jones' cheerful, colorful Christmas tray appointments.

Paper napkins and tray covers, in new designs for the Yule Season, put zest in the meal . . . add a festive note which means so much to patients.

Bright, cheerful surroundings do much in speeding a patient's recovery. Aatell & Jones holiday and Sunday paper tray appointments, through their lively and colorful designs, lift patients' morale. They mean more sanitary service, too, with a clean new tray cover for each serving.

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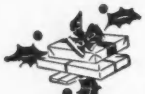

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—physical, mental, and moral fitness of young people of our nation.

. . . Whereas The American Dietetic Association has long held as one of its objectives the improvement of the nutrition of human beings; this objective is one of the essentials of physical fitness and indirectly influences total fitness.

Be it therefore resolved:

1. that The American Dietetic Association pledge its full support to the program of fitness of American youth.
2. that its individual members, and its local and state associations give full cooperation to all ethical groups working for the advancement of the President's program for youth fitness.
3. that the role of nutrition in the fitness of youth be clearly and effectively interpreted to all citizens.

In acknowledging the resolution, the Secretary to the Cabinet, Robert Gray, said in part: "The President was particularly gratified by the confidence and support embodied in the Association's pledge of cooperation with the Council on Youth Fitness."

E. Neige Todhunter, Ph.D., former A.D.A. President, is a member of the Citizens Advisory Committee.

Representation to Allied Groups. Vera Tharp, Illinois Department of Public Welfare, Springfield, has succeeded Dorothy Bovee as Chairman of the A.D.A. Disaster Feeding and Civil Defense Planning Committee. As Chairman, Mrs. Tharp represented the Association at the *Mass Casualties Course* conducted at the Walter Reed Army Institute of Research, Washington, D.C., September 14 to 19. Her report will appear in a later issue.

Dorothy Bovee represented Dr. Doris Johnson at the *Women's Civil Defense Conference* on September 28 to 29 in Washington, D.C. A new program was presented which is of pertinent interest to women's organizations.

FDA Standards of Identity. The program of developing standards of identity, quality, and fill of container for foods is one of the important responsibilities of the Food and Drug Administration. Such standards specify what the standardized food *shall* contain and what it *may* contain; the minimum quality factors which must be met; and the amount of food which must be in container. To that end, the FDA invites the participation of consumer and professional groups in the development of these standards so that the final ones issued are the best possible. Members of the Association may request that their names be put on the mailing list to receive notices of proposed standards and proposed changes in standards. On receipt of such information, members may then comment on the various points, so that their ideas may be considered when final action is taken. George P. Larrick, Commissioner of Food and Drugs, has issued a special invitation to our

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Buy-words for modern hospital food service and . . .

SYRACUSE *China*

Syracuse is high-fired, vitrified china fused to a lustrous steel-hard glaze to prevent crackling and crazing . . . resist chipping and breaking . . . protect against scratches and absorption of bacteria . . . withstand extreme heat without harm to surface or decoration. Really hospital clean—as only china can be!

And only Syracuse offers such a host of beautiful patterns and shapes . . . china that enhances food appeal, insures fuller measure of meal-time pleasure and helps speed patient recovery. Truly salutary, really sanitary!

Investigate these and many other important benefits-in-use of famous Syracuse China. Write today for color brochure of Syracuse's "Hospitality Group" of stock patterns including the new space-saving "Trend" shape shown above.

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Folks will enjoy the fine freshly-creamed flavor of hot drinks with Pream just as they enjoy the finest, most flavorful foods you serve.

Pream creams instantly . . . honestly . . . deliciously. Since only natural sweet cream and milk products are used to make Pream, it's only natural that coffee creamed with Pream tastes good . . . as it should.

Think it over . . . and remember these big ways Pream simplifies serving. No refrigeration. No spoilage. No pitchers or creamers to be washed and sterilized or replaced when broken.

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M&R DIETETIC LABORATORIES, INC., COLUMBUS 16, OHIO

profession to participate in this program.

White House Conference on Aging. We have been notified that Margaret A. Ohlson, Ph.D., has been appointed to serve as Consultant to the Health and Medical Care Planning Committee of the White House Conference on Aging. We are pleased to have a member of the Association appointed to represent nutrition on this important committee.

Guide to Care of Maternity Patients. A "Guide to Hospital Care of Maternity Patients" is under consideration by a joint Committee on Standards of the American Association for Maternal and Infant Health. Mary Reeves represented us on this committee. The Guide will include responsibilities of the dietitian or nutritionist in the pre- and post-natal care and hospital nutrition service to maternity patients.

Historical Gifts to A.D.A. Library. In recent months, the Lulu Graves Memorial Library of A.D.A. has received several additions to its collection of historical publications on foods, nutrition, and dietetics.

The most recent donor is Mabel Richards Dulon of New Canaan, Connecticut, who has presented the Association with an autographed copy of *Mrs. Rorer's New Cookbook* published in 1902 in Philadelphia by Arnold and Company and a copy of Marion Harland's *Complete Cookbook*, a 1903 book from The Bobbs-Merrill Company, Indianapolis. In addition, Mrs. Dulon has contributed four early bound volumes of the *Journal of Home Economics:* Vol. 8, 1916; Vol. 9, 1917; Vol. 10, 1918; and Vol. 11, 1919.

Several publications on food conservation put out by the government during World War I have also been added to The A.D.A. collection, through the courtesy of the JOURNAL'S Managing Editor, Harriet E. Sankey. These include: "Ten Lessons on Food Conservation" issued by the United States Food Administration in 1917; "Home Canning by the One-Period Cold-Pack Method Taught to Canning Club Members in the Northern and Western States" by O. H. Benson, which was USDA Farmers' Bull. 839, published in June 1917; "Home Canning of Fruits and Vegetables as Taught to Canning Club Members in the Southern States" by Mary E. Creswell and Ola Powell, USDA Farmers' Bull. 853, July 1917; and "Home Canning and Drying of Vegetables and Fruits," third victory edition, published in 1918 by the National War Garden Commission. A fifth government booklet, "Lessons in Cooking—Theoretical and Practical for the Sick and Convalescent" was issued by the Government Hospital for the Insane, Department of the Interior, and dates back to 1913. It was designed for the use of the "cooking class of the nurses' training school."

Let CREAM OF RICE help solve your modified diet problems

1

EXTRA NOURISHMENT

Cream of Rice is rich in Iron, plus Vitamin B_1, Riboflavin and Niacin.

New Medical Study proves that Cream of Rice is *easier to digest than any other kind of cereal.* Gives quick food energy, too—within a few minutes after eating. Many pediatricians recommend it for growing children—and as one of baby's first solid foods.

And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, hypertension, intestinal distress and digestive troubles.

2

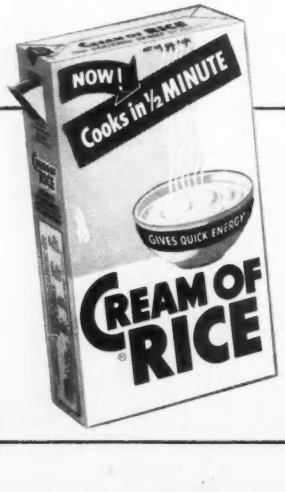
EASY TO PREPARE

Cream of Rice, a delicious, nourishing, easy-to-digest cereal, cooks in just ½ minute! New, easy-pouring spout!

3

CREAMY RICE TASTE

What's more, Cream of Rice is as delicious as it is nutritious. That's why it's so good as a breakfast cereal, too! Adults and children alike will enjoy its creamy deliciousness.



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COMMENDED BY PARENTS' MAGAZINE

FREE!
Professional Sample

Send your name and address to:
Grocery Store Products Co.
Dept. C11J,
West Chester, Pa.

News of Products and Services

The RBLG Hot and Cold Foodveyor manufactured by *S. Blickman, Inc.*, features two coffee dispensers located in a drawer of the hot compartment, each with a capacity of 25 cups. The dispensers are easily removed for cleaning in a dishwasher, thus eliminating the need for cleaning by insert or well "swabbing." Two beverage drawers allow 48 beverage glasses to be filled in the kitchen and delivered upright. When perforated inserts are removed, the cold beverage drawer will provide storage for 24 milk cartons. Beverage drawers can be removed and machine washed. Six removable easy-glide aluminum drawers accommodate three complete heated servings each, and one similar drawer accommodates two complete servings for a total of twenty complete hot servings. The drawers can also hold most coffee or tea pots and dome covers. A radiant heating element on the bottom and sides insures uniform heating. An electric control panel is fitted with a thermostat for regulation of heat. The refrigerated compartment accommodates twenty setup trays with cold foods and desserts. Both heated and refrigerated sections

CONTROL

Foods can provide many minerals needed for control of body functioning . . . as well as for structure of body tissues . . . but special consideration needs to be given to insure that the diet contains enough of certain minerals.

The minimum quantities of foods listed in *A Guide to Good Eating* can provide most of the Recommended Dietary Allowances for

calcium . . . ⅔ from the milk group . . . and ¼ from the other three groups . . . (Consuming a little more milk, cheese, or ice cream will insure intake of the full allowance for calcium) . . .

iron . . . ⅓ from the meat group . . . ¼ from vegetables and fruits . . . and ⅕ from enriched breads and cereals. (Consuming a little more of one or more of the iron-rich foods in these three groups can insure adequate intake of iron.)

Calcium is essential to normal blood clotting, muscle contraction, nerve functioning and cell permeability . . . in addition to its main role in the growth and maintenance of bones and teeth. Iron is used in the formation of hemoglobin, the red blood pigment which carries life-giving oxygen from the lungs to body cells. Phosphorus . . . which plays a vital part in the energy metabolism of the cells as well as in the formation of bony tissues . . . is provided by foods in all four groups . . . especially those which supply calcium and protein. Potassium, sodium and chlorine are involved with maintaining water balance in the body. Potassium is abundant in animal and plant foods . . . sodium and chlorine are present in foods and table salt. Copper, cobalt, magnesium, manganese, molybdenum and zinc take part in various enzyme reactions . . . and are supplied in needed amounts by foods listed in the "Guide."

Iodine . . . part of the thyroid hormone affecting rate of metabolism in all body cells . . . is easily obtained from iodized salt used for seasoning.

Fluorine . . . not demonstrated to be a dietary essential . . . but shown to give developing teeth substantial protection from dental caries . . . is present in many foods and natural and treated waters.

When combined in well-prepared meals, foods selected from each of those four food groups and seasoned with iodized salt can provide all needed minerals . . . while satisfying the tastes, appetites and other nutrient needs of all members of the family...young and old.

USE DAILY

A GUIDE TO GOOD EATING

DAIRY FOODS
3 to 4 glasses milk—children
4 or more glasses—teenagers
2 or more glasses—adults
Cheese, ice cream and other milk-made foods can supply part of the milk

MEAT GROUP
2 or more servings
Meats, fish, poultry, eggs, or cheeses—with dry beans, peas, nuts as alternates

VEGETABLES AND FRUITS
4 or more servings
Include dark green or yellow vegetables, citrus fruit or tomatoes

BREADS AND CEREALS
4 or more servings
Enriched or whole-grain
Added milk improves nutritional values

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

Since 1915 . . . promoting better health through nutrition research and education

NATIONAL DAIRY COUNCIL

A non-profit organization

111 NORTH CANAL STREET • CHICAGO 6, ILLINOIS

THIS ADVERTISEMENT IS ONE OF A SERIES. REPRINTS ARE AVAILABLE UPON REQUEST.

have removable interiors for easy cleaning. Sliding doors on the cold compartment save space. Working height is about 47 in. using 6-in. wheels.

A bulletin available from *S. Blickman, Inc.* describes twin urns in the new line of "Square-low" coffee urns. The square design allows a 50 per cent reduction in size, making them adaptable to a minimum of counter space. Reduction in height facilitates both coffee-making and urn-cleaning and reduces hazards to personnel. A stainless steel filter eliminates the need for urn bags or filter papers.

Borden Foods Company has added an 8-qt. size to its line of Super Starlac bringing to four the sizes now available: an economy-bulk package making 12 qt. milk; a 6-qt. package containing individual, pre-measured foil envelopes, which reconstitute to 1 qt.; and the small family package providing 3 qt. milk. The 12-qt. package will yield milk for about 8 cents a quart. Super Starlac is pasteurized milk with fat and water removed. It contains protein, calcium, and riboflavin. It dissolves in 6 seconds, even in ice water, and may be used as milk is used, for drinking, cooking, and baking. It may also be whipped.

Toledo Scale Corporation engineers have designed the "300" Series Disposers with 3 hp. motors to handle larger capacities of food waste at greater speeds. The new disposers are available in five models. They can be equipped with 18-in. stainless steel cone, scrap block and silverware guard, with or without a cover, or as free standing units with a 32-in. cone that can be fed from all sides. All models, except the base unit model "300," are supplied with manual switch, vacuum breaker, and solenoid valve. Additional features include continuous feed operation which shreds and washes away wastes as they are fed into the machine; flushing action which keeps the unit self-cleaning; long-life shredders made of corrosion-resistant metal; and protective sealing of mechanisms from water and steam.

Lily-Tulip Cup Corporation announces the addition of two new hot drink vending cups. Engineered and manufactured in a lighter-weight, economy-priced line of China-Cote, the 7-oz. cup is available in both squat and tall shapes. The tall shape is designed for operators who originally used the cold-type or combination-type waxed hot cups. The heavy-weight, China-Cote hot-drink vending cups in both the 7-oz. and 9-oz. squat-shape sizes are being retained in the Lily line.

A recently released publication from the *H. J. Heinz Company*, "An ABC's for Baby's Mealtime," has been developed as a handy supplement to feeding instructions for mothers. Beginning with milk, the baby's first food, the booklet describes the foods available in Heinz products from the second week of growth to the textured foods (Heinz Junior) needed at seven to nine months. Directions on how to heat the product, how to feed the baby, and a daily food guide for baby showing the milk, meat, vegetable-fruit, and bread-cereal group of foods, are illustrated with pictures and humorous captions.

Five new pan sizes have been added to the line of stainless steel sectional pans of *Bloomfield Industries*. All have precision tapered sides, rounded corners, and smoothly ground edges. The new sizes are: two-thirds size pans in 2-, 4-, and 6-in. depths; standard one-ninth size in 4-in. depth; and a square, all-purpose sandwich pan, 6 by 6 by 3 in. All pans may be obtained with flat nesting-type covers.

A new roll and food warmer from *Vulcan-Hart Corp.* is equipped with a thermostatically controlled circulation and humidity system that keeps temperatures uniform and prevents food spoilage. Available in two-, three-, or four-drawer models, the stainless steel drawers will keep cooked foods fresh for hours. An exclusive feature is the extra large 22¾ by 13½ in. lift-out drawers that will accommodate a No. 200 steamtable pan. The unit is made of stainless steel with demountable legs that can be removed for any type of installation. No drains, pipes, or fuel connections are necessary. It is electrically operated from a plug-in attachment. The warmer is equipped with bumpers, handle bar, and rubber-tired casters.

Mobile Kitchens, Inc. is manufac-

"Continental Coffee! Continental Coffee! Continental Coffee! Is that *all* you can see?"

Write for free trial package

Continental Coffee

AMERICA'S LEADING COFFEE for Restaurants, Hotels and Institutions

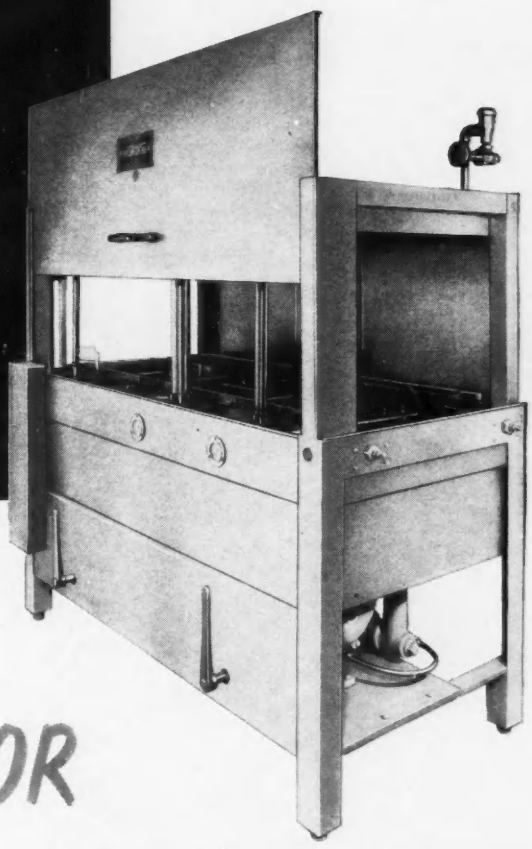
CHICAGO • BROOKLYN • TOLEDO • SEATTLE

Model 2T-P-60 with...
Fresh Water Prewash
Model 2T-P-60R with...
Recirculating Prewash

Length Only 60"

√ PREWASH
√ WASH
√ RINSE

And a Capacity of 4805 Dishes Per Hour!



NEW **TOLEDO**
conveyor dishwashing machine with exclusive...

PANORAMIC DOOR

It's another great Toledo "first" . . . to bring you speedier, more efficient dishwashing with big savings in space. Look it over—every compact 60" of it! Check the exclusive features to streamline kitchen service and cut costs. There's Panoramic Door to boost operator efficiency, make inspection and cleaning fast and easy. There's prewash, wash and rinse with a generous 4805 dishes per hour capacity . . . also Hi-speed pumps with Integral Motors, Zip-Loks on wash tubes, One Level Tanks, Dial-type Thermometers, Vacuum Breakers, Stainless Steel and corrosion-resistant construction! All yours *now* in a dishwasher built to those *highest standards* of quality that assure thoroughly reliable operation. Don't wait—SEND TODAY for complete information on this great new Toledo dishwasher that belongs in *your* kitchen!

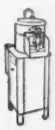
SERVICE Factory-Trained 240 Cities

TOLEDO® *Kitchen Machines*

Division of Toledo Scale Corporation • 245 Hollenbeck St., Rochester, N. Y.

Toledo "10" Slicer . . . Combines handsome design with fast, easy operation. Easy to clean—parts tilt away or are quickly removable. Efficient sharpening. Positive gauge plate control.

Disposers . . . Heavy-duty for fast, trouble-free operation. Full choice of sizes from ½ HP up to 3 HP available in a wide selection of cone sizes.



Peelers . . . Offer fast, double-action peeling with abrasive on both disc and cylinder. Low waste. Portable and cabinet type.

Door-Type Dishwashers . . . Fast, thorough, dependable. Efficient three-way door. Choice of timed automatic or pushbutton controls.

Hi-Speed Mixers . . . Available in 20 qt., 30 qt., and 60 qt. sizes. Modern clean-line design. Wide choice of attachments.

TODAY, MORE THAN EVER, IT PAYS TO GO **TOLEDO** ALL THE WAY!

turing a beverage cart designed by a Cleveland dietitian. The "Augustine" has five hot or cold beverage dispensers with detachable and interchangeable magnetic name plates mounted on a shelf attached to the surface of the cart table. Dispensing faucets are at a convenient level. Four containers operating on slides supply sliced lemons, sugar, tea, spoons, and napkins. A container for ice is recessed in the work top, and a portable dispenser is supplied for cream. A storage compartment below the work top is provided. A dispenser at each end holds cups for either hot or cold beverages. The cart is compact, 40 in. in length and 24 in. in width, with hot-cold thermal control equipment. Made of finished stainless steel and having ball-bearing axles, it is designed to reduce noise and move easily. Rubber tires and rotating rubber bumpers protect walls and doors. Although originally designed for between-meal nourishments, the cart can also be used to serve mealtime beverages.

Hotpoint offers its Supergrid Range, a combination unit suited to the browning of food prior to baking or roasting in the oven base. The one-piece steel griddle top may be controlled independently with four thermostatic control areas and has a capacity of 1000 hamburgers an hour. The electric griddle, through an arrangement of Calrod heating units, eliminates hot and cold spots. The cooking top has front and back grease troughs, wrap-around splatter guards, and front accessible grease drawers. The all-purpose oven base features top and bottom Calrod heating units controlled by pull-to-turn switches with full 200° to 500°F. thermostatic temperature control. The loading door is spring counterbalanced. Although adapted for dual-stage cooking, the top and base of the range may be used independently.

A new low-priced dish truck has been introduced by *The Colson Corporation.* Three 18 by 22 in., crevice-free, stainless-steel, beveled shelves and a chromium-plated tubular frame provide for easy maintenance. With an 11-in. clearance between shelves, the over-all height of the cart is 36⅝ in. The dish truck rolls on four swivel, 5-in., sintered-bearing casters.

A food service conveyor which provides hot meals for twenty persons has also been introduced by *The Colson Corporation.* Four of the five compartment shelves are heated individually with encased strip heaters requiring 1500 watts. A control panel with automatic temperature selector and thermostat is equipped with pilot panel light. The shelves accommodate twelve, 16 by 22 in. trays or twenty, 12 by 16 in. trays. The top or fifth compartment may be used for carrying foods and liquids that do not require heat. It is separated from the other shelves by a 3¼-in. vented air space. The top area provides additional space in transporting food at room temperature. The doors of each compartment open to a horizontal position and are securely set by spring-action, support brackets. Over-all dimensions of the unit are 61¼ by 29½ by 77 in. The conveyor rolls on two rigid and two swivel, 8-in. sealed-bearing casters. An encircling bumper has been provided for protection of walls, doors, and other surfaces.

A new ready-to-eat cereal, Corn Chex, has been introduced by *Ralston Purina Company.* Bite-size, toasted corn with the flavor of corn flakes has been restored to whole-grain values in thiamine, niacin, and iron. A 1-oz. serving supplies 0.12 mg. thiamine, 0.6 mg. niacin, and 0.68 mg. iron. The new product may be used as crumbs for toppings or coatings for meats or fish. Recipes have been developed using Corn Chex in combination with Wheat Chex and Rice Chex in "Party Mix."

Frozen pizza patties from the Institutional Department, *The Rath Packing Company* are now available to schools, restaurants, hospitals, and other institutions. The product is bun-size, 4½ in. wide, and contains beef, pork, and pepperoni. Each pattie weighs 2.7 oz. with six patties to the pound. They are packaged in a polyethylene wrap.

Ready-to-eat, oven-roasted, boneless breast of turkey is also being marketed by *The Rath Packing Company.* The meat is all white, without gelatin, and shaped like natural turkey breast. It

Kitchen
•
Greene Memorial Hospital
•
Xenia, Ohio

Architect: Dan A. Carmichael

Van food service equipment helps small hospitals as well as large

• Whether it is the food service equipment problems of this 87-bed hospital or of Grace-New Haven Hospital with 671 patient beds and 97 bassinets, the hospital administrator and dietitian know they can count on the high standards of design, craftsmanship and efficiency for which Van has been distinguished *for more than a century!*

• Here at Xenia Van collaborated with Architect Dan A. Carmichael to effect the objectives of minimum investment and operating economy which every hospital budget demands.

• If you are planning food service equipment improvements, call for the services of a Van kitchen engineer now.

The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

Branches in Principal Cities

341 EGGLESTON AVENUE CINCINNATI 2, OHIO

You can make news with *Fry-and-Spice Potatoes*

Flavor your French Fries to suit the main dish.....build side-order sales with these novelty potatoes deep-fried in Heavy-Duty MFB

Quik-Tips from Shortening Headquarters for Deep Frying Them Better

- Be sure your thermostat is accurate. Use 8 to 1 load ratio—8 pounds of Heavy-Duty MFB for *each* pound of potatoes.
- High frying temperature does the trick—with Heavy-Duty MFB, the shortening with the high smoke point.
- For the all-use deep fryer, all-vegetable Heavy-Duty MFB insures no transfer of flavors.

Shortening is no sideline with us . . . that's why Heavy-Duty MFB fries and fries and FRIES

For the names of your nearest Wesson distributors, write us, 210 Baronne Street, New Orleans, Louisiana

The Wesson People

Makers of Heavy-Duty MFB . . Keap . . Quik-Blend . . Meedo . . Quiko . . Task

So easy to offer a wide variety on your menu. Just deep-fry your potatoes in Heavy-Duty MFB. Then season each individual serving to complement the main dish. For instance:

1. Sprinkle with garlic or onion salt when served with old-fashioned hamburgers.

2. Use celery salt for a garden-fresh taste to serve with omelets.

3. Salt and season with chili powder to bring out the hearty flavor of barbecued meats.

4. Try curry powder to make unusual side-order for eggs . . . fish . . . or specialty hamburger garnished with chutney.

can be heated by the slice and still remain firm and intact. Weight range is 7 to 9 lb., packed two to the carton.

The *National Canners Association* has issued two new home economics brochures about canned food, especially planned to fit junior and senior high school teaching requirements. The first, "Let's Explore Canned Foods," is an eight-page recipe leaflet for meals or snacks. Four food groups are illustrated with menus combining the foods. The second eight-page leaflet, "Know Your Canned Foods," suggests how to shop for canned foods and read labels and gives common can and jar sizes. A large poster, "Canned Food Buying Guide," also shows the nine can sizes in actual size in which four-fifths of the annual pack of canned fruits, vegetables, and juice are put up, and gives the approximate net weight in ounces or pounds with the measure per cup. Two four-page folders, one on "Using Canned Foods —Class and Home Activities" and the other, "Recipes and Can Sizes," are also available. An eight-page booklet "Canned Food Tables," lists the nutritive values of average-size servings of canned foods, Recommended Dietary Allowances, servings per can or jar for canned foods, common container sizes, and substitutions—one can for another. All material is available to home economics teachers.

Single Serv mustard and Single Serv catsup from *Nu-Way Foods Co.* are now packaged in a wrap of polyethylene, aluminum foil, and bleached sulphite paper. The Single Serv Portion Pak line includes popular flavors of jams and jellies, honey, sirup, salad dressing, mayonnaise, and tartar sauce.

A recently developed textile fabric designed for use as a counter towel and cleaning cloth in restaurants, schools, laboratories, and hospitals has been introduced by *Chicopee Mills, Inc.* "Premium Mesh Miracloth" looks, handles, and feels like woven fabric. When wet, it has a water-retaining capacity that loosens and picks up all soil and stains leaving a lint-free surface. Rinsing releases all soil. Two other advantages are the non-souring and minimum-staining characteristics. The cloths are 18 by 24 in. with fifty in an introductory package.

A food service safety checklist prepared by the National Safety Council is being distributed by *Continental Coffee Company.* It covers both physical properties and work practices of personnel and advises the employer to be as aware of the unsafe act as of the unsafe condition. Hazards in the receiving area, storage area, pot-and-pan room or area, walk-in cooler and freezer, food preparation area, serving area, dining area, and soiled dish processing area are outlined. Columns designated "yes," "no," and "comments" enable the food operator to evaluate hazards and conditions in his establishment.

The new Victory V-line refrigerator display case available from *Victory Metal Manufacturing* features specially constructed, insulated-type glass doors offering maximum accessibility and visibility. When closed, the doors provide an air-tight seal. The case is equipped with adjustable heavy-duty shelving and has a capacity of 48 cu. ft. Self-contained or remote models in two, three, and four sections, constructed of stainless steel, aluminum, porcelain, or baked white enamel, are obtainable.

An extra-low-temperature upright freezer designed to meet popular space-storage requirements combines features and advantages of two older models offered by *Nor-Lake, Inc.* An oversized compressor of ½ hp. insures fast, sharp freezing at sustained temperatures of −20° to −25°F. The dimensions—71½ by 49 by 28½ in.—facilitate movement through doors and installation, yet provide 21.3 cu. ft. unobstructed food capacity. It was designed for such applications as ice cream hardening, laboratory use, processing and prolonged storage of perishable foods and meats. Copper tubing, coiled shelves, and 5½-in. fiberglas insulation, with a heater strip around the door to prevent sweating, are other features.

A new ready-to-eat cereal, Frosty O's, from *General Mills* is made from oats and shaped like small doughnuts. Frosted with sugar, the product is crisp and crunchy and good for snacks as well as for breakfast.

Walker China
VITRIFIED
THE FINEST!
STARLITE
on Narrim Shape
SERVE HEAVENLY MEALS
... on STARLITE
This smart, contemporary pattern is available in several two-color combinations, on a choice of shapes... all finest quality genuine vitrified china, of course. And there is no substitute for vitrified china! Ask your Walker dealer, or send for his name and address.
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